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THE MATERIAL CULTURE OF RELIGION AND RITUAL: AN ANALYSIS OF SOCIAL CHANGE IN THE AZTEC-TO-COLONIAL TRANSITION AT TULA, HIDALGO

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THE MATERIAL CULTURE OF RELIGION AND RITUAL: AN ANALYSIS OF SOCIAL CHANGE IN THE AZTEC-TO-COLONIAL TRANSITION AT TULA, HIDALGO

by

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Dedication

To my parents, biological and adoptive:

Clara M. Dugan, Christopher A. Iverson, and Ana Suárez Cortés.

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THE MATERIAL CULTURE OF RELIGION AND RITUAL: AN ANALYSIS OF SOCIAL CHANGE IN THE AZTEC-TO-COLONIAL TRANSITION AT TULA, HIDALGO

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This dissertation offers an archaeological perspective on the relationships between power, history, religion, and ritual. Using Tula, Hidalgo in central Mexico as a case study, I provide a long-term perspective on how Christianity developed in the New World following the Spanish military conquest of the Aztec empire. The bulk of secondary historical literature characterizes the colonial conversion project as a top-down process to which Indigenous actors could passively acquiesce or revolt. Using artifacts deposited by Tula's Indigenous majority, I adopt a material culture perspective to argue for another view: that the active, diverse engagements of Indigenous subjects changed Christianity by forcing it to adapt to Indigenous religious ontologies.

To examine the religious transition in Tula, this dissertation compares two early colonial sites: an open chapel constructed around 1530 A.D., and a cathedral constructed around 1550 A.D. I employ historical documents, human burials, architectural elements, ritual objects such as censers, and everyday artifacts such as ceramics, faunal remains, and macrobotanical specimens. The two sites and their

corresponding artifact assemblages allow for a diachronic comparison of social change within the Church and the community in Tula.

This dissertation takes a power-centered approach to the study of religion. I adopt Judith Butler's concept of "resignification" to explain the material patterns in Tula: I found that Christian rites, concepts, buildings, and words shifted significantly as they were repeated within an Indigenous religious framework. This broader frame also informs my approach to the major themes of the dissertation: religion, ritual, and history.

Based on previous research, my study revealed that Aztec activities in Tula were likely centered around two major rituals that first deconsecrated and later reanimated the city, an interpretation that speaks to debates surrounding the Aztecs' relationships with their predecessors, the Toltecs, whose capital was Tula. Using data from my excavations, I found that colonial Christian ritual was immediately shaped by Indigenous prerogatives—especially feasting and outdoor worship—and these persisted even as the colonial Church stabilized. My study of everyday materials from a religious perspective revealed that Spanish friars were compelled to adapt to Indigenous material preferences: material changes occurred primarily within the Indigenous tradition even as the Church consolidated its authority in New Spain. Broadly, this dissertation argues that colonial Christianity in central Mexico was deeply indebted to the active contributions of Indigenous subjects.

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CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

This dissertation uses material culture to examine religious change during the Aztec-to-colonial transition in Tula, Hidalgo in central Mexico. It employs a broad combination of material culture (documents, architecture, human remains, ceramics, and faunal and macrobotanical evidence) to compare two early Franciscan sites: a chapel constructed in 1530 A.D., and a cathedral constructed in 1550 A.D. These sites and their artifact assemblages have allowed me to examine friars' first interactions with Indigenous subjects in the New World, and to understand how this changed as the Church stabilized in the mid-sixteenth century. Major architectural differences between the two sites—from a simple open chapel design to an imposing, fortress-like cathedral—initially suggested very different approaches to colonial conversion strategies and engagements with local Indigenous populations. The goal of this dissertation, then, was to understand how material culture changed during the first decades of Spanish colonialism, and whether this varied amongst different material classes. To frame these questions and my findings, I employ a broad theoretical framework focused on power. Within that framework I focus specifically on theory related to historical production, ritual, and religion.

1.2 COLONIAL CHRISTIANITY IN CENTRAL MEXICO

In 1524, a group of twelve Franciscan friars arrived in central Mexico (then New Spain) to begin the initial phases of an ambitious Christian evangelization project. They arrived in a new world that was still dominated by pre-Columbian social institutions, religious beliefs, and settlement distributions (Gibson 1964). Vestiges of the incumbent empire at the time of the Spanish conquest, the Aztec[1] empire or the Triple Alliance, were still very much a part of the world that the friars were tasked to convert. Though the Aztec empire itself was young when the Spanish arrived, it was simply the most recent iteration of a long history of sophisticated political configurations that had dominated the region for millennia (Berdan 2014:31-44). The Mesoamerican innovations and traditions in science, arts, religion, agriculture, and social organization were not discarded once the Spanish conquered the region (Burkhart 1989, Edgerton 2001, Gibson 1964, Lockhart 1992). Rather, the Spanish and Indigenous subjects largely maintained the integrity of the old system, with elites from both cultures occupying different, complementary, and often competing positions at the top of the colonial hierarchy (Gibson 1964).

Colonial administrators adopted many elements of the preexisting Aztec system because it would have been absolutely impossible to administer in a region as vast as Mesoamerica without taking advantage of the pre-Columbian system (Gibson 1964). However, the expedient advantages of these general colonial processes are more difficult to demonstrate in the case of Spanish religious institutions. Though these, too, took advantage of existing pre-Columbian forms, the Church had a much greater stake in differentiating their own practices from the "idolatrous" practices, images, and buildings of the societies that they encountered (Tavárez 2011:15).

In this venture the Spanish enjoyed superficial successes, particularly in terms of dismantling the institutional aspects of Aztec religion (its temples, priests and priestesses,

[1] A note on terminology: for colonial subjects who were or were descended from the original inhabitants of Mexico, I use the term "Indigenous." I do this because the population that I study in Tula, Hidalgo was composed of several different ethnic groups—chiefly Nahua and Otomí speakers—and I wish to emphasize their collective contributions to the material record. Perhaps future researchers will be able to recognize the differences between the material patterns of these groups and be better able to reveal the factionalism amongst them. I refer to the empire that dominated central Mexico (including Tula) during the late Postclassic, and its attendant material culture, as "Aztec," though this term has been debated, and though this is merely shorthand for a long and complicated history (Berdan 2014:xvii). The Aztecs were a people that migrated from a semi-mythical homeland of Aztlan, interacting with several important cities (including Tula) before founding their capital city in Tenochtitlan in 1325 A.D. In 1430 A.D. they allied with two other city-states (Tlatelolco and Tlacopan) to form an empire that eventually dominated most of central Mexico (See Berdan 2014:40-41). When I am referring specifically to colonial-era Aztec descendants, I use the word "Nahuas."

religious schools, and public celebrations—see Andrews and Hassig 1984, Mendieta 1870, Ricard 1966). But friars' Utopian ambitions (Gómez 2001) to remold the very foundations of Indigenous societies in what is today central Mexico met many challenges. Friars faced outright resistance. They also faced the "resistance of culture," that is, the resistance asserted by the sheer force of preexisting social and geographical structures (Wernke 2007). Epidemic disease decimated the Indigenous population, which resulted in major population shifts (Hanks 2010:32), just as the plagues had in the Old World (Christian 1981). The two societies faced one another with fundamental misunderstandings: concepts such as sin were alien to the Indigenous peoples, while the Spanish could not understand practices such as sacrifice (Cervantes 1994, Gibson 1964). Linguistic translation was a theological minefield (Hanks 2010, Ricard 1966). The friars also faced very low ratios of monastics to Indigenous populations (Hanks 2012:41), which made friars' individual ideas and preferences more salient and bred variation (Graham 2011:286). Then, too there were philosophical differences between the orders themselves, between the orders and the secular priests, and squabbles between the Crown and the orders (Ricard 1966).

Most importantly, the friars faced the proactive engagement of Indigenous subjects in Christianity, which fundamentally changed the nature of ritual and the nature of religion itself (see e.g. Burkhart 1989, 1998, Cervantes 1994, Gibson 1964, Graham 2011, Hanks 2010:34, Lockhart 1992, Pardo 2006). As scholars have learned more about pre-Columbian religions, languages, and lifeways it has become increasingly clear that Indigenous ways of being informed the foundations of colonial Mexican societies (Burkhart 1989, 1998, Gibson 1964). Still, it is difficult to clearly understand Indigenous roles in creating and changing Christianity in the New World.

Within the national narrative of Mexico and international scholarship, the religious violence of the past has been sanitized in order to create a "bloodless" history that is more palatable to tourists, inoffensive to modern religious groups, and that more closely mimics Anglophile narratives of colonization (Magnoni, Ardren, and Hutson 2007:364; see also

Wilcox 2009: 17). This celebrated, "bloodless" past combines with the dearth of archaeological attention to religion (Insoll 2004) to create a distorted and misrepresented idea of religion's role in the tensions of the early colonial period and the Spanish conversion program (but see Graham 2011, Wernke 2007).

At the same time, however, narratives of Spanish colonialism and the conquistadores have coalesced into a far more common narrative, the "Black Legend." that pits violent gold-greedy cultural imperialists against an innocent New World population (see Restall 2003b). The Church's role in this violence included the destruction of temples, the elimination of the State-supported Aztec priesthood, the massive burning of books, and the beginning of idolatry trials in the New World (e.g. Andrews and Hassig 1984, Gibson 1964, Tavárez, 2011).

William Hanks (2010) recently explained the more insidious violence of the *reducción* system, in which the Church attempted to eliminate or "reorder" Indigenous lifeways. This eradication took place at all scales: the personal (forms of worship, burial practices, personal habits), social (communal ritual, language), and geographical (the relocation and consolidation of Indigenous towns according to the Church's ideals) [Hanks 2010]. However, while Hanks (2010[2]) portrayed *reducción* as a comprehensive, totalizing system, other ethnohistorians have questioned the true success of these attempts to reorder Indigenous worlds (Lockhart 1992:45).

In a similar way, material traces of *reducción* efforts in the Andes indicate that Indigenous people experienced the relocations that occurred in the sixteenth century as extensions of pre-Columbian Inka centralizing forces (Wernke 2007). This was likely true in central Mexico as well, as congregation efforts usually merely duplicated pre-Columbian towns (Lockhart 1992:45). More broadly, scholars have questioned the notion of a

[2] Hanks himself describes unintended revolutionary consequences of the *reducción* efforts during the nineteenth century in the Maya region: "Ironically, *reducción* is being used to cast off the system of *reducción*" (Hanks 2010:365-368).

coherent colonial ideological program (e.g. Burkhart 1998, Rodríguez-Alegría 2002). When tested, then, neither the "bloodless" narrative nor the Black Legend appear to adequately account for the complexities of colonial interactions—particularly in the realm of colonial religious practice.

Indigenous engagements with Catholicism have been difficult to discuss in part because it was long assumed that their participation in the Church could not have been voluntary. Archaeological and linguistic studies, however, have demonstrated that conversion was more than a simple top-down process that could either be accommodated or resisted by Indigenous subjects (Graham 2011, Tavárez 2011, c.f. Klor de Alva 1982). In spite of—or because of—the overt and subtle violence of the Spanish conversion campaigns, Indigenous people converted to Catholicism. Their authentic, diverse engagements with Christianity cannot be summarized by a simple binary of superficial acceptance or violent resistance (Graham 2011:298, Hanks 2010:8, Tavárez 2011:273-277). Though Indigenous subjects are increasingly visible in the documentary record (Restall 2003a), archaeologies of religion contribute a powerful additional line of evidence to illuminate the ways that Indigenous religious practices and preferences shaped Christianity in the colonial era (e.g. Graham 2011; more broadly Insoll ed. 2009, 2011).

This dissertation is intended to investigate those processes and narratives through the archaeological study of two Franciscan sites in a single city, Tula, in southwestern Hidalgo (Figure 2.1), known in the colonial era as Tollan Xicocotitlan. Tula is most famous as the capital of the Toltec civilization, which flourished between 900 and 1150 A.D. Tula was later brought under the control of the Aztec empire, likely after the formation of the Aztec Triple Alliance that consolidated power in 1428 A.D. (see Chapter 2, Chipman 2005:82, Gillespie 1989:194), a period that coincided with a population boom in and around the Basin of Mexico (Smith 2008:78). The Aztec empire had special historical ties to Tula that precipitated unique religio-political configurations in both the Aztec and colonial periods (Chapter 5). When Franciscan friars arrived shortly after the Spanish conquest, they established their buildings in a landscape that was already tied to the pre-Columbian heritage. Despite these connections, this more recent part of Tula's history has been underinvestigated in archaeological scholarship.

Figure 1.1 Noted Archaeological Sites and Tula Inset. (Adapted by the author from NGS 1968.)

In what follows, I outline the questions that have guided the present study, and the methods that I used to approach them. In a later section I explain the theoretical approach to power that undergirds this dissertation, as well as the ways that religion and ritual relate to those concepts of power. I then explain how material studies in particular help to illuminate these questions. In a final section, I provide an outline of the dissertation and the contributions that it makes to the existing literature.

1.3 TULA: A BRIEF HISTORY, RESEARCH QUESTIONS, AND METHODOLOGY

In the pre-Columbian era Tula was most likely inhabited by a majority-Otomí population that was controlled by members of the Tenochtitlan elite[3], in part because of the royal dynasty's long connections with (and reinstitution of) the Toltec dynastic line in Tula itself (Chipman 2005:82, Gillespie 1989:194, see Chapter 5). In colonial times, Cortés and the Spanish administrators maintained those connections by making Pedro Moctezuma, son of the Aztec emperor Moctezuma II, the *encomendero* of the region, meaning he was entitled to labor tribute. Other indigenous agents, however—possibly Otomí leaders who were frustrated with the Aztec control of the area since before the colonial era—attempted to take advantage of the Spanish legal system to deny Pedro's hereditary claims to power. It is clear that the factionalism in Tula influenced Indigenous interactions with Spanish institutions; this is evident from dozens of lawsuits that pit Tula's indigenous leaders against the Moctezuma family (Chipman 2005). It is not clear as of yet how this factionalism played out in the institutional religious sphere. However, it is known that Pedro converted to Christianity almost immediately (Chipman 2005, Pardo 2006:23), likely to attain legitimacy within the new colonial system. Though I do not support a view of conversion that is only political, I present this information to emphasize that there were multiple competing Indigenous factions within colonial Tula, all of which may have had good reason to convert beyond coercion. Regardless of initial motives, however, the material evidence presented in this dissertation demonstrates that Indigenous prerogatives drove both continuity and change in religious contexts.

Because of this history and its architectural heritage, which is partly preserved in two early Franciscan sites, Tula is in many ways an ideal setting in which to study the changing material culture of those early conversion processes. Before the construction of its first chapel, Tula was incorporated into the diocese in Mexico City (Ballesteros García

[3] The situation of majority-Otomí population with Nahua rulership was also present in Tepepolco, the polity where Sahagún produced his work *Primeros Memoriales* (Sahagún 1997[1590]:5)

2003:127, Ricard 1966:64). However, Robert Ricard cites a colonial source that refers to "the priest of Tula" celebrating a Mass in the newly founded city of Guanajuato on September 20, 1526 (Ricard 1966:140). It is therefore possible that Tula had a resident priest beginning in the earliest years of the evangelization program.

The Archaeological Zone of Tula, which was established to protect Tula's Toltec-era (900-1150 A.D.) site, contains a Franciscan chapel built very shortly after the arrival of the Twelve in central Mexico (1529 or 1530 A.D.), hereafter referred to as the Open Chapel (Figure 1.5). This three-walled, open structure is a unique innovation of religious architecture in the New World, considered to be a compromise between Indigenous and Spanish forms (Edgerton 2001). In addition, we know that this building was constructed under the direction of Tula's first friar, Alonso Rangel. Rangel was linguistically gifted; since his arrival in New Spain he had learned Nahuatl, the Aztecs' primary tongue, and he was the first to create a dictionary of the Otomí language (both languages were spoken in Tula). Linguistic and architectural evidence at Tula, therefore, point to mutual accommodations between the two societies that came into contact in early colonial Tula.

This period in Tula's colonial history corresponds with the broader colonial religious history of the region, in which mendicants were focused on gaining footholds in the urban areas of New Spain, learning the local languages, and eradicating the vestiges of institutional pre-Columbian religions (destroying the "pagan" temples was a major priority). As I will explain in detail in Chapter 5, the only known center of pre-Columbian religious activity in Aztec-era Tula appears to have been Tula Grande itself—i.e., the civic-religious center of the Toltecs. Yet the friars did not destroy this center.

Some scholars consider open chapel constructions to have served primarily as expedient preludes to the larger, more permanent, and more formal religious architecture that began to be built in the second and third decade after the conquest (Kubler 2012). In 1550, Friar Motolinía (the *provincial*, or regional religious authority) issued an order that a new monastery be built in Tula (Ballestros García 2003:128). This request may have formed part of the wave of *consolidación* programs, or official recommendations from the Crown and the Church to centralize dispersed Indigenous populations into new urban centers, that took place in the 1550s (Lockhart 1992:45, Ricard 1966:136). The monastery in Tula (hereafter referred to as the Cathedral of San José, or simply the Cathedral) housed four resident mendicants by the 1580s (Jiménez Abollado 2003:117). By the end of the sixteenth century, the mendicants at Tula attended to a local population of around 3,000 people (the vast majority Indigenous, but also Spaniards, Mestizos, and Afro-descendants), as well as six additional urban neighborhoods and fifteen *visitas*, or smaller towns without resident friars (Ballestros García 2003:128-129).

The Cathedral of San José (Figure 1.2) is a fortress-like structure that today serves as the regional headquarters of the Diocese of Tula. As I designed my archaeological project, I understood the transition from the Open Chapel to the Cathedral as physical evidence of the Church's increasing authority and stability, as well as its "reordering" patterns, in the early colonial period. The fortress-like appearance of the Cathedral was not coincidental, but rather a deliberate symbolic reference to spiritual warfare based on the writings of Saint Paul (Ballestros García 2003:131, Ephesians 6:10-20). The Spanish mendicants considered themselves "militants" engaged in spiritual warfare against the Devil, idolatry, and paganism (Tavárez 2011:3). Based on a superficial reading of the architectural changes in Tula (from the "accommodative" Open Chapel to the militant symbolism of the Cathedral) it was not unreasonable to assume that the Church was successful in those efforts in Tula. Though these assumptions initially guided my research questions, as my understanding evolved and as I uncovered new data I was forced to abandon even these assumptions about the buildings themselves. I no longer see the Cathedral as a straightforward symbol of institutional Catholic dominance (see Chapter 6).

Figure 1.2 The Cathedral of San José in the 1930s, 1940s, and 1960s. Photographs courtesy of the Diocese of Tula.

With this (erroneous) narrative in mind, I designed an archaeological project that would allow me to examine the material culture of the Church's transition in the early colonial years. The evolving monumental architecture of the Church, I thought, could be measured against traces of more quotidian material culture (such as ceramics, lithics, and remnants of plants and animals) in order to understand how the priests and congregants at Tula adapted to one another over time, in the process forming a new kind of Christianity in the New World. If the architectural story of increasing institutional Christian centralization and authority, could we expect analogous changes in the rest of the material culture at the two sites? Would this remain consistent among all classes of material culture? Finally, was the colonial religious architecture built on top of preexisting pre-Columbian religious structures, thereby symbolically "conquering" them? As I learned over the course of my excavations and as I explain in this dissertation, all of these questions were slightly misplaced. In asking them, however, I gained access to data that revealed evidence of much more complex interactions.

For the colonial materials, I expected to find one of two possibilities. The first possibility that I considered was that evidence would reveal a Church markedly concerned with some areas of material culture and religious practice (such as burials) and not others (such as ceramics used in feasting). I also considered the possibility that the transition from the Open Chapel to the Cathedral site would mark a sharp increase in European material culture, while Indigenous-tradition ceramics, foods, and other materials would wane. In the tradition of most archaeological investigations, the evidence did not conform neatly to either of those expectations. Instead, I found a complex mixture of material culture that indicates a complex process of colonial negotiations surrounding both religion and ritual. In what I consider to be my most important finding, my evidence shows that the Church had to adapt to Indigenous preferences, reforming itself in response to Indigenous religious enthusiasms, technologies, material culture, and landscapes. For example, Indigenous religions emphasized theater and public outdoor celebrations; friars in Tula built a structure with only three walls (the Open Chapel) to accommodate their preference (see Chapter 6, see also Edgerton 2001). Indigenous peoples had complex food tradition (Coe 1994) with clear religious connotations (e.g. Morán 2007); it is this tradition, rather than its Spanish analogue, that is present in colonial contexts in the material culture at Tula's Open Chapel and Cathedral of San José. European and Asian imported ceramics are also absent in early colonial contexts at both sites, and locally manufactured European-inspired majolicas are rare. Instead, I found a prevalence of Indigenous-tradition ceramics, such as redwares and Black-on-Orange decorated wares, which gradually transformed according to evolving Indigenous tastes (a similar progression is noted in Hernández Sánchez 2012).

Regarding the nature of the colonial building's relationships with earlier occupational phases, I expected to find one of two patterns. One possibility was clear evidence of Aztec-era settlements, conforming to the commonly held idea that colonial buildings were regularly constructed on top of Aztec-era temples (Lockhart 1992:420, Burkhart 1998:209). Alternatively, I expected to find ephemeral evidence of the dispersed Aztec-era settlement patterns found elsewhere in the region (e.g. Mastache and Crespo 1974). At both sites (see Chapter 4), I found evidence for creative Aztec-era modifications to existing Tollan-phase structures. The Franciscan buildings were, in turn, constructed directly on top of these. However, my inquiries into the occupational sequence at the two sites did not reveal the straightforward evidence of symbolic dominance that I had expected. The Open Chapel appears to be constructed on top of Tollan-phase and Aztec-era structures that seem to be civic or residential in function (Chapter 4, Chapter 6). The Cathedral was built on top of a large Tollan phase platform structure, modified in the Aztec era, whose function is still unknown—our excavations did not prove that the platform had served a religious purpose. Importantly, the only known locus of Aztec-era institutional religious practice in Tula appears to have been the ancient Toltec center itself (Chapter 5). These findings deeply complicated my assumptions about colonial-era symbolic dominance.

The archaeological study on which this dissertation is based took place over a year and a half, beginning in October 2012 and ending in December 2013. The project that I designed included a mapping phase, a paleopathological study of the human remains recovered in Carol Vázquez's excavations in 2010 (see Vázquez Cibrián 2013), four months of excavations at the Open Chapel and the Cathedral of San José in Tula, and analysis of the materials recovered from my project (shell ornaments, around 50,000 ceramic sherds, macrobotanical remains, faunal remains, and a wealth of stone tools). The quantity of information recovered from the project could not possibly be included in this dissertation, but it will be published in the future in a technical report for Mexico's National Institute of Anthropology and History (INAH), as well as several planned articles.

In the first phase, we mapped the region surrounding the Open Chapel and the atrium of the Cathedral of San José using a Total Station and a handheld TDS, based on coordinates established with a handheld GPS. This was important in order to georeference the two sites and our excavation units. I had also hoped to use the map to uncover surface-level evidence of a more extensive settlement at the Open Chapel, but this was largely a failure (in part due to extensive low-intensity farming in the area, and in part due to the fact that many of Tula's architectural features are subsurface: see Chapter 4 and Healan 2012).

Later, using a system based on Carol Vázquez's 2010 project, we established a grid (three points of which are also marked in cement at the Open Chapel) and used a line-and-level technique, along with long tapes, to mark out sequentially-numbered excavation units, here called Operations. I describe each operation in detail in Chapter 4. During the excavation phase, we used a modified Harris method. That is, we excavated according to changes in natural and cultural stratigraphy, wherein each new stratum or feature constituted a context, and created matrices of reverse depositional order of those contexts. However, if a given stratum was larger than 10 cm, we created a new identifying context number. Each context had a unique map, soil description according to major characteristics, at least one photograph, a record of all associated artifacts, and a narrative of excavation and major findings.

We excavated with several goals in mind. First, I hoped to find everyday material objects (e.g. ceramics, stone tools, faunal remains) that could be compared between the two sites to better understand the impact of the earliest years of the Spanish Church, and how material culture may have changed when Church authority began to stabilize and consolidate (marked in Tula by the shift to the Cathedral). As noted above, I was also interested in the relationships between Tula's three major occupational phases: the Tollan phase, the Aztec era, and the colonial era, particularly because there is little published data on the last two periods compared to its Tollan-phase occupation. As I show in Chapter 4, we found evidence of each of these periods in each excavation unit.

We screened 100 percent of the excavated dirt through a quarter-inch screen. My team collected all artifacts from all contexts with the exception of fragments of stucco and modern debris such as plastic and modern glass, though we noted this on site forms. We labeled these artifacts with a unique bag number in a running registry. We collected soil specimens of at least 5 liters (when possible) from all features, including several primary trash deposits. We also collected samples when macrobotanical specimens might have aided in discovering whether a given context was colonial. América Martínez Santitlan completed the macrobotanical analysis, and Atenea Eira Mendoza Rosas conducted the identification of all of our faunal specimens. I summarize the preliminary results of both of those analyses in Chapter 7. The purpose of these analyses was to understand whether European imports impacted foodways in the immediate postconquest years, and whether these changed further at the later Cathedral site. I found that changes in foodways were quite gradual, and had complex religious associations (Chapter 7).

In 2012 Valerie Davis aided the project with a detailed paleopathological analysis (Appendix B) of burials recovered during Carol Vázquez Cibrián's 2010 excavations (Vázquez Cibrián 2013), the results of which are only briefly summarized in this dissertation and will be the subject of a future publication. With respect to Ms. Davis's analysis, I was interested primarily in the physical impact of colonialism on the burial population at the Open Chapel.

Maria Elena Suárez Cortés and I completed the ceramics analysis, which is included in part in Chapters 4, 6, and 7 and Appendix A. I created a database for the collection of almost 50,000 sherds, and used this to supply the analyses that I present in Chapters 4, 6, and 7. I used the ceramics for chronological observations, but they also indicate religious change and Indigenous input into religious celebrations. For example, we found remnants of Aztec-tradition braziers and censers in colonial contexts (Chapter 6). We also found unexpected patterns in the colonial-era ceramics—for example, a paucity of European and Asian imports (Chapter 7).

My project design included a strong public component. At the Open Chapel, I worked in cooperation with Marco Antonio Pérez, an anthropologist who arranged tours with groups of schoolchildren so that they could see archaeology in action (Figure 1.3). At the Cathedral, I consulted with the Diocese staff prior to initiating work in order to solicit their input on the project's design. I also created a large informative poster that the Diocese staff kindly placed prominently at the entrance to the church (Figure 1.4). Because of the poster and our very public excavation location, we had the opportunity to talk with many members of the community as our excavations progressed. The discovery that the Cathedral had been constructed on top of a Toltec-era platform (see Chapter 4) generated a good deal of excitement and local pride in the building.

In what follows I explain the power-based theoretical framework that I have adopted to interpret the project's findings.

Figure 1.3 Iverson with a group of primary school students during her 2013 excavations at the Franciscan Open Chapel in the Zona Arqueológica de Tula.

Figure 1.4 Poster designed by Iverson to explain her archaeological project at the Cathedral of San José in Tula, Hidalgo.

Figure 1.5: 2013 Excavation crew in front of Tula's Open Chapel. Carol Vázquez's project (2013) restored the building in 2010. From left to right: Abraham Leura Jiménez, Pedro Rodríguez Ávila, Clara Margarita Serrano Tolentino, Ana Maria Suárez Cortés, Margarita Hernández Martínez, and Shannon Dugan Iverson.

1.4 THEORETICAL FOUNDATION: POWER IN THE COLONIAL ERA

The theoretical dimension of this research is intended to foreground relations of power between the religious colonizers and the colonized. While I agree with William Hanks's (Hanks 2010:5) observation that when we talk about conversion, "we are talking about the social and cultural conversion of entire ethnic groups as a part of colonial domination," this dissertation focuses on two other facets of colonial power relations related to the conversion process. First, I contend (along with many ethnohistorians, e.g. Burkhart 1989, 1999, Gibson 1964) that Indigenous subjects had a much more active role in shaping colonial institutions in the New World than is commonly accepted (also see Restall 2003 for a summary of popular beliefs regarding colonial Mexico). Second, I argue (along with Pardo 2006) that while Indigenous subjects had to use their existing material and ideational concepts to frame the new colonial situation, colonizers (particularly Franciscan mendicants) *also* had to make sense of an unfamiliar colonial world in which they were outnumbered (Lockhart 1992:263), on foreign ground, and deeply dependent upon preexisting Indigenous institutions (Gibson 1964). In a series of complex processes, colonial systems morphed to become the products of both the colonizers and the colonized. In other words, I see colonial conversion processes not merely as the result of Indigenous actors reacting to or resisting Christian precepts, but rather actively shaping Christian practice and material culture.

These claims rest on ideas of power, which in turn requires some explanation of the classic social scientific formulation of power relations at the broadest level: agency, structure, and social change. The agency/structure duality and its analytical resolution have been in place since Marx: "men make their own history," he said in an oft-cited passage, "but they do not make it under circumstances chosen by themselves, but under circumstances directly found, given, and transmitted from the past" (Marx 1978:595). Marx's passage succinctly summarizes his emphasis on two related dichotomies: essential power/social power, and base/superstructure. First, it encompasses the difference between what Marx called "essential power," and "social power." Essential power is the human capacity to think, feel, and reason (Marx 1978:88-89). Marx argued that essential power was material, even when it appeared to be a product of the mind (Marx 1978:88-89). Social power, in turn, is essential power multiplied (Marx 1978:161). Though it too is material, social power often appears to be an alien force to individuals, because they have not chosen its manifestations and thus it appears to be a natural, unchangeable force (Marx 1978:161).

Marx was concerned with the positionality of historical actors within an economic system, specifically industrial capitalism (e.g. Marx 1978:204-206, see Engels 1978:734-759 for other economic systems). This work enabled the study of the relationships between the material realities of the world, which he called the "base," and the ideological, political, institutional, discursive, and cultural practices that he called "superstructure" (Williams 1977:75-82). The difference between base and superstructure is fundamentally the difference between material worlds and ideal concepts. Marx, of course, emphasized the primacy of the former, while his near-contemporary Max Weber (1994, 2001) insisted that the latter had greater explanatory power. Because of his emphasis on ideal, structural forms, Weber's definitions of power are chiefly concerned with two forms of dominance: diffuse dominance (e.g. market forces) and authority-based dominance, or "the power to command and the duty to obey" (Miller and Tilley 1989:6).

The social sciences "constitute one long dialogue with the ghost of Marx," (Wolf 1982:20), as well as Weber. Refinements of their ideas have resulted in a general consensus (Bourdieu 1977, Giddens 1984) of power relations within a dyad of agency and structure, with both concepts related to Marx's essential/social powers and notions of base/superstructure along with Weber's ideas regarding dominance. Agentive power (agency) refers to informed action, or the power of individuals and collectivities to negotiate from within their positions in social structures (Bourdieu 1977)—social structures generally conform to Marx's notion of the superstructure. Structural power entails "the power to deploy and allocate… labor" (Wolf 1990); the control and production of knowledge, education, and aesthetics (e.g. Foucault 1994, Bourdieu 1984); or discourses of identity, such as gender (e.g. Butler 1990).

Social scientific debates and refinements to the rough description of power relations outlined above have resulted in several important observations that have increased our ability to understand and locate power. First, both agency and structural power are non-substantive analytical categories. As such, it is important to carefully historicize and contextualize their application in any real case: agents engage in *particular* negotiations; structural power involves *particular* technologies, mechanisms, institutions, and practices (Foucault 1994:326-348, 1965, 1977, 1978). Additionally, power itself is not a substantive entity or a "possession" of the powerful that can be wielded upon the weak (Foucault 1994:340, McGuire 2002:123). Rather, power circulates—though very unevenly—in all human relations. Relatedly, power cannot be located by searching only for "agentive power" (such as resistance) or only describing the contours of structures (such as laws and regulations). Instead, power is found in the relationship between agency and structure. Importantly, these relationships are always characterized as processes, and as such they create change. This relationship has been characterized in many ways: as mediation (Williams 1977), structuration (Giddens 1984), practice theory (Bourdieu 1977), the dialectic (McGuire 2002), hermeneutics and dialectics (Shanks and Tilley 1987:103-112), subjectivity and governmentality (Foucault 1994), and resignification (Butler 1990). These formulations vary significantly, but all have in common an emphasis on understanding the relationship between structure and agency as a process.

I have found Judith Butler's (1990) concept of resignification to be the most powerful framework for the changes that I observed in colonial Tula. Briefly, Butler's work allows us to see that structural concepts (in her analysis, the concept of "woman" or "heterosexual") are in fact fictions without a single material example in reality. Real human agents appropriate, negotiate, and reject these categories according to their particular interests and social positions, but it is never possible to assume the ideal form in reality (Butler 1990:45). The ideal categories (such as "woman") are therefore always in motion, always becoming: a process. For Butler, change happens precisely because the real-world iterations of the categories are never perfect, and in the iterative process they decenter the meanings of the categories themselves: this is resignification.

So it was, I argue, for ideal concepts (e.g. "the good Christian," "Utopia") in the colonial world. "Church" as ideal category (see Durandus 1907) could not help but take on new significance when its material form was built with Indigenous labor, using stones quarried from Indigenous temples, on landscapes that had preexisting supernatural connotations (Chapter 6). Neither the colonizers nor the colonized ever intended colonial New World Christianity to be something distinct from the European forms of Christianity that preceded it. And, of course, there was no single "European form" to turn to, though the Church certainly attempted it (see W. Christian 1981 and Chapter 2). But while violence of course precluded open, equal debate between the two societies regarding the nature of colonial institutions and practices, Indigenous people nevertheless exerted a powerful influence (intentional or not) on colonial structures as they negotiated the material reality of Christianity. In the process, Christianity itself changed, and its meanings destabilized (Pardo 2006). The Butlerian idea of resignification, and similar observations by Bourdieu (1977) and Giddens, (1984) thus frames this study at its broadest level: the nature of colonial power relations.

1.5 POWER AND ITS RELATIONSHIP TO HISTORY, RELIGION, AND RITUAL

In this dissertation, I discuss power as it relates to three forms of social practice: historiography (Chapter 5), religion (Chapters 2 and 7), and ritual (Chapter 6). In this section, I outline the ways that these concepts relate to the general framework of power that I outlined above.

Tula's pre-Columbian history is bound up in debates surrounding the Aztec Empire's relationships with its predecessors in Tula. Power imbalances at all stages of historical production shape what is considered history (and relatedly, what is considered truth), and likewise shape historical silences (Trouillot 1995). Both history and its silences have concrete material effects (see Trouillot 1995 and Chapter 5). Michel-Rolph Trouillot framed historiography as an active process; as such, it circulates power unevenly, similarly to the iterative processes that I described above. In Tula, the Aztecs manipulated, appropriated, and destroyed history to honor the past and use it to support their own claims of legitimacy. I argue that in practice, Aztec historical erasures and inventions resulted in claiming Tula as a symbol of legitimacy. In fact, Tula was just a small part of a much broader cultural legacy, and further, several non-Aztec groups also claimed it (López Luján and López Austin 2000, Umberger 1987). In turn, this manipulation of history has caused a great deal of modern debate regarding whether Tula (historical Tollan) was a historical fact or a mythical invention of the Aztecs (e.g. Kowalski and Kristan-Graham eds. 2007). I argue that by creating a framework in which truth is less important than an examination of historiographical process, it is possible to see Tula as what it probably was: both myth and reality, an active creation of the history of a single city as well as a silencing of the history that belonged more properly to Mesoamerica as a whole, not only to the Aztecs. This interpretation treats history as a social practice subject to unevenly circulating power, as outlined above. With respect to Tula, I argue that the Aztecs' need to claim control of Tula using so many different media (i.e. by using relics, associating themselves with its dynasty, even re-inhabiting Tula) points to the instability of the narrative. That is, the narrative had to be repeated because its claims to truth were uncertain.

The process-centered approach to power relations of scholars such as Bourdieu, Giddens, and Butler also informs my approach to the major theme of this dissertation, religion. Religion has long been a topic of research in anthropology, but the concept has recently been the subject of a sustained critique (Asad 1993, Graham 2011:66-69, Smith 1978, Tambiah 1990, Tavárez 2011:4). For example, Talal Asad (1993:53-54) critiqued Clifford Geertz's (1973) idea of religion as representations and symbols on the grounds that this framework did not adequately consider power relations or the historicization of particular religions. On the other hand, religion is sometimes seen exclusively in terms of power relations (most famously by Marx, who referred to it as a false ideology[4] and "the opium of the masses"). In both frameworks, the basic centrality of the supernatural to

[4] Faubion (1994:15) provides a succinct summary of the concept of ideology and the problems that it entails.

concepts of religion tends to be lost (see Horton 1960, Smith 1978 for comprehensive critiques).

In this dissertation I use a deliberately flexible and simultaneously very narrow definition of the term religion. I define "religion" as the relationship between humans and the supernatural (in Chapter 2 I elaborate on what this definition does not entail). In one sense, religion (for most of history for the two societies I study) crosscut all institutions and all identities, and informed daily practice. However, in both societies at the time of the conquest, religion also had institutionalized aspects (e.g. specialized priests, buildings, and state-sponsored celebrations). Heeding the critiques cited above, I contextualize the historical trajectory of religion in the Christian and Aztec worlds, and the ways that power circulated unevenly in these specific human-supernatural relationships.

These two aspects of religion (the general and the institutional sense) meant that Aztec engagements with the supernatural could be "beheaded" (see Griffiths 1996 for a similar phenomenon in the Andes)—its state-sponsored, institutional aspects cut off—but the thousands of more mundane manifestations of human-god interactions could not be effectively subdued (Burkhart 1989, Durán 1977, Gibson 1964, Pardo 2006). Similarly, in part because there was no single "Aztec religion," there was no unified indigenous response to colonial attempts at religious imposition; Indigenous people assented and dissented in myriad ways (Klor de Alva 1982, Lockhart 1992:203, Tavárez 2011:269-271). Even overt resistance to the friars did not necessarily mean rejection of Christianity (Graham 2011). In other words, the Church (and Spanish colonial society) was indeed an imposition to which Indigenous communities reacted with dissent, but they also made the Church their own through active resignification. In this dissertation I contextualize religion (in both its institutional and general aspects) as a form of practice that occurred between the agentive and structural relations of power in the colonial era. I show that this practice had concrete material correlates: since religion infused every realm of life in the early colonial era, everyday objects were associated with the supernatural. Ceramics, foodstuffs, and landscapes can therefore be examined from a religious standpoint, in addition to materials that were more directly related to ritual (religious buildings, for example).

Religious ritual was also a major sphere in which Indigenous subjects asserted their prerogatives within the colonial Church (Chapter 6). Ritual intersects religion, and scholars often see it as the enactment of religious ideas, or sometimes conflate it with religion itself (Insoll 2004:2012). To conflate the two terms is to imply that there is a social space outside of religion, which was not the case in the historical period considered in this dissertation (see Chapter 2). Additionally, ritual is not simply an "enactment" of religion; as an active process, it serves to inculcate and modify religious ideas. Catherine Bell (1992) proposed a shift from a functionalist perspective on ritual (espoused by many anthropologists) to a process-based approach that investigates how ritual works. Themes derived from Bell's work ask that we investigate ritual as action that is characterized by:

> -*Formalism: Rituals often employ more formal, or restricted, codes of speech and action than everyday life*
>
> -*Traditionalism: Rituals often employ archaic or anachronistic elements*
>
> -*Invariance: Rituals often follow strict, repetitive, patterns.*
>
> -*Rule governance: Rituals are often governed by a strict code of rules that determine appropriate behavior*
>
> -*Sacral symbolism: Rituals often make reference to, or employ, sacred symbolism*
>
> -*Performance: Ritual often involves public display of ritual actions.*
>
> (Fogelin 2008:4, summary of Bell 1997:138-170).

Bell (1992:221-222) also addressed the commonly held assumption that ritual functions as a tool of social control: "ritualized practices, of necessity, require the external consent of participants while simultaneously tolerating a fair degree of internal resistance. As such they do not function as an instrument of heavy-handed social control…the type of authority formulated by ritualization tends to make ritual activities effective in grounding and displaying a sense of community without overriding the autonomy of individuals or subgroups." In the practice-oriented approach, then, ritual both reflects and inculcates religious sentiment, creates community while honoring the individual, and allows both imposed order and the introduction of dissent. As such, its power lies in cohesion and malleability; as a practice, it is another way of mediating between agentive power and structural power. In this dissertation, I apply Bell's observations regarding ritual to the material culture of Franciscan sites at Tula (Chapter 6). Bell's insights into the particular power of ritual enable us to see how Indigenous religious prerogatives could have come to permanently change the colonial systems that attempted to eradicate them.

1.6 MATERIAL CORRELATES OF POWER, HISTORY, RELIGION, AND RITUAL

Since this dissertation concerns material culture, it is necessary to explain the ways that archaeologists have gone about understanding power, history, religion, and ritual using material evidence. In this section I highlight a handful of studies that have used archaeology to investigate the themes explored in the previous section (power, history, religion, and ritual). These studies have in turn inspired my own methodologies and interpretations, which I summarize in the final section of this chapter.

At the broadest level, I found inspiration in studies that critically examined social inequality, particularly from the perspective of the colonized and enslaved (e.g. Alcock 2001, Byrne 2001, Franklin 2001, Graham 2011, Paynter 2001, Rodriguez Alegría 2008, 2010, Wernke 2007, Wilson ed. 2001). Though these studies adopt different methodologies, they are unified in their insistence that enslaved and colonized peoples creatively asserted themselves within the confines of oppressive systems. I was also inspired by the long tradition of Mesoamerican scholarship that focuses specifically on power relations—in particular on commoner-elite and core-periphery relationships (e.g. Brumfiel 1991, 1992, 1996, 2001, Fournier 1990, Hutson 2002, Joyce 2001, Magnoni et al. 2007, Mata-Míguez et al. 2012, Smith 2008).

Maria Franklin's (2001) study of the foodways of enslaved Afro-Virginians examined faunal remains over time to understand the creation of a distinctive cuisine that differed from that of Anglo-Virginians—for example, it incorporated many more varieties of wild animals. Though Afro-Virginians initially had to work with a body of unfamiliar foodstuffs that were either indigenous to the Americas or European imports, Franklin combined historical and archaeological data to show that these foods took on new meanings within the Afro-Virginian context. Thus, even in a context of severe constraint, enslaved Afro-Virginians asserted power by using food to carve out a unique identity based partially on African culinary traditions (e.g. stewing methods) and partially on innovations within the new context in the Americas. This study inspired my examination of foodways in colonial-era Tula (see Chapter 7 and the last section of this chapter).

Enrique Rodríguez-Alegría's various examinations of ceramics in colonial Xaltocan (Rodríguez-Alegría 2010) compared ceramics from peripheral domestic contexts in Xaltocan with contexts from the town's center. His data indicated that ceramics in the town center (which he associated with elites) were usually Indigenous-tradition, while ceramic assemblages from peripheral residential areas (associated with up-and-coming commoners) featured more European-inspired majolicas. Based on these patterns, he argued that the commoners used majolica to assert legitimacy and power through association with the Spaniards (whether through trade or knowledge of their material worlds). On the other hand, the established elites in the town center used traditional ceramics, which had preexisting Indigenous connotations of legitimacy (through their use in public ritual in the pre-Columbian era, for example). This study inspired my analysis of everyday colonial ceramics (Chapter 7).

These studies clarify the idea that material culture is not simply a reflection of power relations, but can be used by social actors as radical resignifications (Butler 1990, Beaudry et al 1996). Also, in both of the cases above, material culture is multivalent—that is, its meanings change according to its use in particular social contexts. Because of this multivalence, material culture reflects social realities, but agents can also use it to negotiate within the constraints of social structures (see also Meskell 2005, Mullins 1999, Yentsch and Beaudry 2001).

For understanding the material culture of historical power, I have been inspired by a body of research related to landscape and social memory (e.g. Alcock 2001, Basso 1996, Byrne 2003, Horning 2001, Umberger 1987, Van Dyke and Alcock 2003). Many of these studies are concerned with modern memories of societies in the distant past, but Susan Alcock (2001) and Ruth Van Dyke and Alcock (eds. 2003) use material culture to speak to the past of the past. For example, Alcock noted that Greeks under Roman rule disassembled, transported, and then reassembled a 500-year-old temple to place in the center of Athens. In addition, they placed a shrine meant to commemorate the Roman emperor in a much more antique (2000 year-old) tomb (Alcock 2001:323). Alcock argues that these antique monuments symbolically represented the older, pre-colonized Greek past. By carefully reconstructing and placing the antique temple in the center of Athens, the Greeks were reminded of their own more glorious past. The juxtaposition of the shrine to the Roman emperor in the context of another antique Greek monument, the ancient tomb, acted to symbolically question Roman narratives of glory. In the Roman colonial context, antique monuments such as the temple and tomb functioned as symbolic shorthand: the Greek past was older, greater, and more innovative than the Roman present. This study inspired my reinterpretation of the Aztec-era occupation at Tula, described in the last section of this chapter as well as in Chapter 5.

The subject of this dissertation, religion and ritual, has been difficult for archaeologists to approach despite its clear significance throughout human history (Insoll 2004)—though this has changed rapidly over the course of my dissertation work (e.g. Fogelin 2008, Graham 2011, Insoll 2009, Insoll ed. 2011, Vázquez Cibrián 2013), and it was an important topic of research earlier in Mexico (Córdova Tello 1992, Fournier 1990).

For this dissertation I was inspired by an earlier study by Elizabeth Kyder-Reid (1996). In that study, Kyder-Reid examined the former estate of a religious community, the Southern Redemptorists, whose values of poverty, simplicity, and contemplative communal existence (shielded from the world) are known through historical documents. The estate that the Redemptorists inherited had been the home of a wealthy landowner, Charles Carol, who had sculpted the garden of his mansion to accentuate beautiful vistas. In Carol's time, the grounds of the estate were carefully molded for his personal enjoyment and as a symbolic display of his wealth and taste, reflecting elite values of wealth, individualism, and ostentation. When the Redemptorists inherited the estate, they set about masking the mansion (worth a substantial sum, and thus antithetical to their value of poverty) from public view. They also enclosed the grounds with high walls to separate their contemplative community from worldly concerns. Where Carol had sculpted the grounds with ornamental plants, the Redemptorists created a productive farm that reflected and enacted their values of simplicity and denial of material ostentation.

Studies such as Kyder-Reid's show that mundane material culture can be used in combination with historical documents to understand material change. In her case, material culture was not merely expedient, but rather used to enact religious values. This study inspired me to look beyond the realm of "religious objects" (usually objects used in ritual) to understand the ways that other kinds of material objects (such as ceramics and foodstuffs) were used to create, change, and negotiate between the two religious ontologies in place in colonial Tula.

I am also indebted to studies that have problematized the material culture of ritual and religion through a sharp focus on contexts, rather than using individual objects as markers. In her 2011 study, Elizabeth Graham examined a colonial-era church in Tipu, Belize. She knew from documentary evidence that the Maya had expelled the friars during a series of rebellions in 1638-41 (Graham 2011:17). However, Graham discovered that that the colonial Maya continued to bury the dead at Tipu's Christian church using Christian burial positions even after they had expelled the friars. She used these data to argue that the Maya could reject Christian religious authorities even as they continued elements of Christian religious practice. This clarified for me the complexities of Indigenous engagements with Christianity, and the ability of material culture to speak to larger debates surrounding colonial religious practice.

In another study, James Brady and Polly Peterson (2008) also use context to complicate notions of what constitutes a "ritual" object. Using historical documents and ethnographic analogy, Brady and Peterson argue that Maya caves as a whole constitute ritual contexts. On that basis, they argue that the ceramic assemblages found in caves—which include ceramic and lithic materials that are normally considered "utilitarian"—in fact constitute vestiges of ritual activity. They further support this claim by showing that "utilitarian" wares (such as jars) were used to burn copal incense, which is well-documented as a ritual function (Brady and Peterson 2008:84). Furthermore, they compare cave assemblages with non-ritual assemblages to show that these overlap almost entirely. However, the cave (ritual) contexts showed a higher percentage of miniature vessels; a special vessel form (called a "shoe pot") is found almost exclusively in Maya-area caves (Brady and Peterson 2008:85). In this dissertation I adopt a similar logic to argue that materials from colonial contexts in the Franciscan sites in Tula primarily constitute vestiges of communal celebrations and feasts.

Collectively, the three studies outlined above reveal religion and rituals as active processes that utilized both everyday and unique material culture. In the earlier case, materials culture is not just a reflection of religious ideas and values, but serves to actively inculcate them.

1.7 OUTLINE AND CONTRIBUTIONS

Within a theoretical and methodological framework focused on power, I specifically address theoretical, historical, and material issues related to historical practice, religion, and ritual.

In the following chapter (Chapter 2) I discuss the meaning of religion to the two societies that I study by constructing small summaries of their long-term historical trajectories. Drawing from a long tradition of ethnohistorical research, I briefly discuss the history of colonial religion and some of the factors that made the Church unstable and incoherent in the sixteenth century. Finally, I discuss how ethnohistorians have framed these very complex processes, while situating my own research vis-a-vis those debates and themes.

In Chapter 3, I discuss Tula's history of research, which has primarily concentrated on Tollan-phase Tula. Through this discussion, I reveal some important elements of Tula as a Toltec site (which I elaborate upon in Chapter 5). This history is important to explain because it contextualizes my findings in Chapter 4: at both of my excavation sites, I found that Aztec-era and colonial contexts were built in dialogue with the preexisting Toltec structures. This was particularly the case in the Aztec era: my findings and previous research show clearly that Aztec-era peoples in Tula almost never built from scratch (as they had when they founded Tenochtitlan, for example). Instead, they modified existing Toltec buildings. In Chapter 3 I also highlight the archaeologist Jorge Acosta's published findings from a long-term excavation in Tula's Tollan-phase ceremonial center. I use his publications to show that, based on refinements to the Aztec ceramic typologies, he is likely to have exaggerated the impact of the early Aztec, or Fuego-phase (1150-1350) occupation at Tula. However, his research also forms an enormous body of material evidence to demonstrate that the Aztecs intervened in the Toltec site through a series of constructive, destructive, and commemorative activities. These included "burying" the iconic Toltec warrior statues, placing offerings, and constructing a new altar next to one of Tula Grande's temples.

In Chapter 4, I introduce the preliminary findings of my project. These add another layer to the established history at Tula, because they focus on the repercussions of Tollan (Tula) in the Aztec and colonial eras. In Chapter 4 I stress that it is important to reframe Tula as an Aztec-era site in addition to its existing status as an important early Postclassic site. Finally, I stress that the major finding of my research is evidence of extremely gradual change in the early and mid-sixteenth century: as will be apparent from my descriptions of the excavations, it was often difficult to distinguish between colonial-era and Aztec-era contexts.

In Chapter 5 I provide a reinterpretation of the debates surrounding Aztec-era interventions in Tula. Colonial documents in central Mexico consistently referred to a fabled city called Tollan inhabited by people called Toltecs (e.g. Sahagún 1961). The documents spoke of the people of this city as the Aztecs' historical predecessors, ascribing to them all that was great in civilization (such as the "true" language, wonderful buildings, and precious objects- Nicholson 2001, Sahagún 1961). Scholars, especially archaeologists, long assumed that these stories referred to a single city, and furthermore that this city corresponded to the ancient city in Tula (Gillespie 2007). However, modern research indicates that "Tollan" was not a single city, but rather multiple cities that made up a panregional phenomenon (e.g. López Austin and López Luján 2000). In my reinterpretation, I build on Acosta's evidence (1941-1961, outlined in Chapter 3) to reframe this debate, arguing that both interpretations are simultaneously accurate. I argue that because history's "truth" is contingent upon power, the Aztecs "stole" the broader regional history and claimed that it belonged to them alone—and further, that this history rested in Tula. In the colonial era, other indigenous factions (particularly Otomí leaders) contested those claims (Chipman 2005).

In Chapter 6 I explore the material evidence at Tula through the lens of ritual, showing that ritual was a poor vehicle of social control. I present historical data that shows that the colonial-era friars in Tula were concerned with learning and using Indigenous languages well into the colonial era (Ballestros García 2003). The Church was also concerned with expressing symbolic ideas through material culture: among the books listed in the historical inventories was William Durandus's *Rationale Divinorum Officiorum,* a thirteenth-century work that described church symbolism. On the other hand, other scholars (e.g. Edgerton 2001) have provided evidence to show that sixteenth century architecture and art was largely a reflection and enactment of Indigenous religious prerogatives, particularly their enthusiasm for public ritual and celebration (e.g. Clendinnen 1990, Córdova Tello 1992, Pardo 2006). I use this multivalence to explore the meanings of the Open Chapel and Cathedral, and to suggest that both sets of meanings could have been operational simultaneously. Furthermore, my own data show that typical pre-Columbian "ritual" objects (such as censers) are found in quantity in colonial contexts. Thus, regardless of the intentions of the friars, material culture formed part of a process of resignification through which Indigenous prerogatives became major facets of Mexican Catholicism.

Finally, in Chapter 7 I explore material culture through the lens of religion as a broader concept. I argue first that there is substantial overlap between the bodies of material culture commonly deemed "religious" (i.e., those used specifically in ritual) and those that are used in "mundane" activities (Brady and Peterson 2008). Furthermore, as I argue in Chapter 2, there was no area "outside" of religion in the historical period under investigation. I therefore argue that the areas that I excavated—in and around the atria of the two religious buildings—constitute contexts that must be examined in terms of religion. Within this frame, I use my data to show that there was remarkably little change in ceramic patterns in the colonial era. I also marshal data from my project's macrobotanical and faunal analyses to show that there was gradual change that had different meanings for friars and Indigenous subjects. These patterns held even after the friars in Tula centralized their authority by building the Cathedral. Instead, the changes already in place from the years at the Open Chapel—the penchant for outdoor worship, the penchant for celebrations and feasting, and the preexisting ritual associations of foods such as corn and turkey—were carried on in the material culture of the Cathedral.

This dissertation will contribute an important material line of evidence to a very rich historical and linguistic literature on colonial religion. It also contributes to our understanding of Tula as an Aztec site, which is crucial considering the important relationship between the Aztecs and the city that they called Tollan. This dissertation also concentrates on religion, a topic that is only beginning to mature in archaeological studies. While I am sure that my interpretations will be vastly improved by the refinements and corrections of future research, I consider it a step forward in understanding everyday material culture through a religious lens. The specific colonial contexts that I present here will prove useful to future researchers for comparative purposes (well-defined colonial contexts are rare in central Mexico: Hernández Sanchez 2012). Finally, as noted earlier, my data show barely perceptible change between the pre-Columbian and colonial periods, and the enormous importance of Indigenous prerogatives in shaping colonial society in general and Spanish religious institutions in particular. This finding speaks to the instability of these enterprises, the malleability of friars as agents of institutional religion, and the still-underestimated power of Indigenous subjects.

CHAPTER 2: HISTORICAL BACKGROUND ON RELIGION

2.1 INTRODUCTION: CRITIQUES OF THE CONCEPT OF RELIGION

The Spanish colonial project was, to borrow Barbara Voss's (2008:13) terms, "a unified (though not uniform) colonizing force," and religion was a crucial part of that project. "Religion" is a slippery concept (Bowie 2003:3) that has specifically Western roots. The term has been the subject of serious and prolonged critique in recent work (e.g. Asad 1993, Clendinnen 1990:110, Graham 2011:66-69, Tambiah 1990, Tavárez 2011:4).

Despite these criticisms, I argue that religion is a useful heuristic tool and is, *within limits*, and with careful historicism, cross-culturally commensurable (in Spiro's sense: 1990:8). I define religion as the interdependent relationship of social collectivities with the supernatural (see Horton 1960:2011, Tambiah 1990:6; cf. Asad 1993:54) and the human attempts to engage that awareness within particular constellations of power. I want to be explicit about what this definition does *not* include; namely, the notion of religion as an aspect of identity, or as monolithic, optional, compartmentalized, magical, superstitious, irrational, apolitical, equivalent to ideology, or necessarily independent of "the secular." I also feel that it is necessary, following the critiques cited below, to contextualize the historical trajectory of Christianity and compare it to our developing knowledge of the historical trajectory of Aztec religion.

Thoughtful critiques cite the general imprecision and lack of historical grounding characterized in broad cross-cultural applications of "religion," as well as the difficulties posed by notions of religion that are separated from the contexts of power that enable, inform, and constrain them (Smith 1978:120-125, Graham 2011:69, Tavárez 2011:3). I understand the criticisms posed by these critiques, as well as the challenges that they pose to the canon of anthropological studies of religion. However, there is another potential danger in failing to take seriously engagements with the supernatural. First, engagements with the sacred infused every area of life in both of the societies that came into contact in sixteenth-century New Spain; "the secular" did not exist. Failing to engage with religion as a concept, and failing to see it in a cross-cultural perspective, risks subsuming the sacred (which has been, until recently, a nearly universal human experience) to other, equally contentious cross-cultural concepts such as "ideology," "imperialism," "the State," "discipline," that do not explicitly theorize sacred beliefs and practices. That is, religion is subject to but not equivalent to relations of power, and to completely subsume religion to notions of ideology is to fundamentally misunderstand past societies.

I also insist upon religion as an analytical category because I believe that attempts to skirt the term while (inevitably) continuing to talk about the concepts entailed by religion only serves to further muddy the issue. There is, to my knowledge, no better term for comparative purposes as yet, and replacement concepts tend to be imprecise and unable to shed the baggage associated with religion (e.g. Tavárez 2011:4, "devotions"). Further, Talal Asad's (1993:29) criticism of religion on the grounds that "its constituent elements and relationships are historically specific" and "that definition is itself the product of discursive practices" is also true of every abstract analytical concept, including some that Asad himself employs (e.g. "discipline"; cf. Foucault 1977, 1994). Further, Asad's critique rests on a basic theoretical orientation—that human societies are incommensurate even using the broadest terms—which *itself* has a historical trajectory within anthropological thought (Spiro 1990:8, see also Wolf 1990). Wilfred Smith (1978), whose detailed historicization of the term has spurred many of the recent critiques, offered the following measured opinion: "I do not contend, then, that the old concepts are meaningless; rather that they are imprecise and liable to distort what they are asked to represent" (Smith 1978:125). Finally, I feel that it is critical not to disregard the findings of the many anthropologists who have grappled with the issue since anthropology became a discipline (e.g. Mauss 1990, Douglas 1966, Eliade 1963, Geertz 1973, Turner 1969). In this study I have found several broad concepts drawn from this scholarship—for example, Mauss' (1990) concept of a "total phenomenon," and Mircea Eliade's notion of the *axis mundi*—to be appropriate and insightful. However, I have here tried to heed the lessons of the critiques of the term by ensuring that the histories and unique colonial contexts of the two societies that I study are duly described in this dissertation.

Indigenous religions in the New World were heterogeneous (e.g. Graham 2011:71-73, Tavárez 2011:3, Taube 2012), and had state-sanctioned, regional, and non-state manifestations (e.g. Brumfiel 2001). European Christianity manifested equal heterogeneity (Christian 1981). In Mesoamerica, religions at the time of conquest were the products of at least 1,500 years of engagement with the sacred that were, in turn, the results of a partially shared history and continuous interregional interaction, leading to discernable cross-regional continuities (see Carrasco et. al, eds, 2000). The same was true for the Christian world (Smith 1978). Additionally, given the incredible ratios of Spanish friars to Indigenous peoples in many New World contexts (e.g. Hanks 2010:41), friars' individual religious convictions assumed more importance (Graham 2011:286), and conversely, Indigenous prerogatives held significant sway over the shape of rites and sacraments (Pardo 2006).

In examining what is meant by religion in the Christian context, it is instructive to turn to Asad's (1993:27-54) and Tambiah's (1990:4-6; based on Smith 1978) surveys of what religion as an emic (read: Christian) concept meant to Christians over time, not least because these serve to illuminate the particular fields of power before and at the time of the Spanish conquest. The trajectory also usefully serves to differentiate between various anthropological notions of religion (Asad 1993:54). I then outline a similar trajectory for Aztec religions. I then give short summaries of Aztec religion at the moment of conquest, as well as some general observations about the nature of early-colonial Christian practices in the New World. In the final two sections, I highlight some of the themes of secondary sources that relate to that research, and then explain how my own approach fits into those frameworks.

Before beginning those sections, however, I would like to briefly comment on my terminology. For both Aztec and Spanish religions I have made only one distinction within religion, which I feel is the most historically appropriate in both cases. That is, I distinguish between institutionalized religion (the priests and priestesses of the Aztec world, along with their training and financial and social support; the monastic orders of Spain; and the State-sponsored monumental architecture and elaborate celebrations associated with these) and religion as a more general, total social phenomenon. Institutionalized religion for the Spanish had centralizing, orthodox, disciplinary tendencies (e.g. Hanks 2010, Christian 1981). Aztec institutionalized religion, I have argued along with others (see below), was much more tolerant of non-institutionalized religious heterodoxy, but nonetheless imposed the prerogatives of the State cult onto commoners, conquered city-states, neighborhoods (Brumfiel 2001). On the other hand, religion as a general concept and a total social phenomenon for both societies entailed certain commonalities with institutionalized religion, but was in both cases enormously heterodox. I choose not to use another term for the more general meaning of religion (such as "religiosity" or "local religion" or "commoner religion") because of historical evidence that religion as a sense of the supernatural cut across all social levels, albeit with clear differences in terms of specific practices and emphases. I am using "institution" in the narrow sense of an official organization with specific goals, policies, etc. rather than as isomorphic with the term "structure," which can connote practices that are not explicit in discourse (Hodgson 2006).

2.2 THE TRAJECTORY OF RELIGION IN THE CHRISTIAN WORLD

"What religion is" to Christians has changed substantially over the course of two millennia. Christianity, sometime toward the beginning of its existence, was "total phenomenon" in Mauss' sense, meaning that religion articulated with every facet of life (Tambiah 1990:4, Mauss 1990, cf. Asad 1993:28), though it also had institutional elements from the beginning (Smith 1978). "Faith" and the "Church,"—in the sense of a unified community of faith—were the dominant themes in Christianity. That this latter preoccupation continued into the 16th century and was transferred to New Spain is evident from documents and in building construction at Tula (see Chapter 6).

In the Middle Ages, Christianity increasingly became a discourse that served to distinguish between truth and falsehood; its role was to discipline "fallen" men and to authorize or reject particular practices (Asad 1993:34-35). Christians used the term "faith" rather than "religion," (Tambiah 1990:4), and the Church's authority was increasingly consolidated (Asad 1993:39). According to Asad (1993:39), personal convictions regarding faith or god were relatively meaningless in the context of a centralized authority that claimed to be the sole determinant of what was sacred and what was profane. Tambiah (1990:4) notes that the notion of "true vs. false religion" (*vera et falsa religio*) originated in early Christianity, but increased in this period through the teachings of St. Augustine.

The Protestant Reformation of 1517 permanently divided European Christianity and touched off the Catholic Counter-Reformation, beginning with the Council of Trent in 1554. The message of the Protestant reforms was essentially a rejection of the authority of the church; instead, "*religio* designated something personal, inner, and transcendentally oriented" (Tambiah 1990:4). I will claim in Chapters 6 and 7 that it was also during this period—a period of rapid colonial expansion throughout the globe—that the Church faced another foe, namely, the religious convictions of other societies. Challenges from both the inside and the outside shaped increasing attempts to consolidate the authority of religion as an institution, as well as the fundamental precepts of faith.

According to Asad (1993:40-43) religion first appears as a conceptual, essentialized cross-cultural category in the seventeenth century. This vastly expanded idea of religion coincided with a severely diminished notion of what it meant to be specifically Christian: it simply connoted belief in Jesus as the Messiah (Asad 1993:41). Nature, rather than scripture, became the supreme example of God's works. At the time, Christian theologians and philosophers posited that god was knowable through rational perception of nature

(Asad 1993:41, Tambiah 1990:4-5) This "Natural Religion" was "demarcated from, and also supportive of, the emerging domain of natural science" (Tambiah 1990:4-5).

It is important to note here that science evolved from religion; the two were intricately connected (see von Sydow 2005 on Darwin) but increasingly relegated to separate spheres. Science was, in a sense, the undoing of religion in the modern world, but not for the reasons that are popularly cited (e.g. that science is rationally superior). Rather, the division of science from religion was part of a larger, longer process in which science, religion, governments, and a host of other formerly fused categories became "perspectives" (Asad 1993: 49; Tambiah 1990:5). As science separated from religion, it became possible to understand religion as an analytical, generic category that could be used to compare different relationships to God or gods that were, by the late 19th century, appended with "isms": Hinduism, Buddhism, atheism, etc. (Tambiah 1990). Critics point out that the social scientific typologies of religion have rendered their historical and cultural meanings moot. Religion under the scientific magnifying glass (which includes anthropology) has been rendered as a way for humans to reproduce God in their own image, make their own society coherent through a system of symbols, or create order out of chaos (see Asad 1993). In other words, the scientific analysis of religion mistakenly searches for explanation, rather than historically grounded description (Horton 1960). Meanwhile—at least compared to earlier eras—the Church itself has lost its force as an institution in the Western world, though as Michel Foucault (1994:333) notes its particular forms of power spread outside of the institution. Additionally, individuals in many parts of the modern world experience religion as an aspect of identity, such as race or class, rather than as a total phenomenon.

Indigenous religions in central Mexico encountered Spanish Christian religions in the sixteenth century, at the height of the sea change brought about by the Protestant Reformation, and the two traveled together from that point. Of course the particularities of that meeting (as opposed to Christian encounters in other colonial contexts) forged lasting and distinct manifestations of Christianity in New Spain and what would become Mexico (Pardo 2006).

2.3 THE TRAJECTORY OF RELIGION IN MESOAMERICA

Mesoamericans religious traditions may be traced back to the Formative period, beginning with the Olmec culture, but for the purposes of this chapter I begin with what the Aztecs themselves considered the "birthplace of the Gods," Teotihuacan. This Classic-period city is the "canonical source" of Postclassic religions (Taube 2000:268) Teotihuacan was a massive polity (around 200,000 inhabitants), with centralized authority over nearly all of central Mexico, and with some influence over Classic Maya cities (the precise nature of which is still being explored, see e.g. Carrasco et. al. 2000). Teotihuacan was also a truly urban polity, with distinct neighborhoods for regionally distinct artisans and traders (Pazstory 1997). Teotihuacan was itself the product of processes of centralization and urbanization that started around 200 B.C., and would continue after Teotihuacan's collapse in the eighth century (Pazstory 1997:76).

This city had two massive monuments, today called the Pyramid of the Sun and the Pyramid of the Moon, that were constructed very early in the city's history, by 1 A.D. (Pasztory 1997:77). A later temple, called the temple of Quetzalcoatl or the Feathered Serpent, was built between 100-200 A.D. in a complex known as the Ciutadela, or the Fortress (Pasztory 1997:108-121). This later temple seems to form an important part of political and religious shifts, with a new emphasis on elaborate decorations to the temple, sacrificial human offerings of at least 200 individuals (Taube 2000:270), and perhaps most importantly, the veneration of the Feathered Serpent. A second, enigmatic deity is featured in the façade of the building, and has been described as a "war serpent" by Karl Taube (2000:270-274). Archaeologists are currently conducting excavations in a cave that runs underneath this pyramid, resulting in fascinating new finds (Yuhas 2015). The gods of the Teotihuacan pantheon are generally considered to form prototypes for deities throughout later Mesoamerican cultures, and the Feathered Serpent in particular would form the basis of a future pan-Mesoamerican cult (López Austin and López Luján 2000).

The Epiclassic period (700-900 A.D.) is so called because it marks the dispersal of the formerly centralized Teotihuacano authority into competing city-states. Slightly after this period, authority was once again semi-centralized at Tula, perhaps the largest city of its time (Healan 2012:85), but Tula did not exert the same breadth of political control and influence as had Teotihuacan or the later Aztec state, and multiple cities shared (and competed for) authority at the time (López Austin and López Luján 2000). The Aztecs and their Mexica descendants called the peoples of this era "the Toltecs," a broad term that referred to great artisans and "civilized people" (see Chapters 3 and 5). This period is marked by an increasing interaction with polities in northern and western Mexico (Healan 2012:93-94). As well, this period is marked by confusing interactions between central Mexico and the Maya region, the Yucatecan Puuc region and Chichén Itzá in particular, which have been the subject of considerable debate (see Chapter 5).

From a political perspective this rather more dispersed authority had a unique approach. López Austin and López Luján (2000) argue that the Epiclassic religio-political system (the *Zuyuá system* in their terms) dealt with ethnic and religious difference through integration. That is, the political system "tended to the maintenance of (traditional ethnic) internal public order and respected the ideological foundations of power in each one of the units, but superimposed a multi-ethnic apparatus as the head of the global organization" (López Austin and López Luján 2000:30). In other words, the Epiclassic and Early Postclassic systems were fundamentally integrative, and able to balance a great variety of internal difference while simultaneously emphasizing pan-regional notions of religiosity. In this system the unique (i.e. patron deities) was integrated into and subsumed to the global, epitomized in the "ideological essence" of the Feathered Serpent and its avatars (López Austin and López Luján 2000:39). At this time, the largest and most important religious building in Mesoamerica was the Temple of Quetzalcoatl in Cholula, which may have been "politically neutral" in an interregional sense; this city was perhaps the nexus of the global aspect of Mesoamerican religion and legitimate political authority of the period (McCafferty 2000).

This dispersed state of affairs continued for some time, until political power began to centralize once again in the Basin of Mexico. Azcapotzalco, Texcoco, and Colhuacan were major city-states in the fourteenth century, and Tenochtitlan paid tribute to the first city (Berdan 2014:41). Later, Tenochtitlan allied with two other city states in the Basin of Mexico (Texcoco and Tlacopan) and successfully conquered much of the territory in central Mexico (with several exceptions, notably the Cholula/Tlaxcala region, see McCafferty 2000). The new Aztec state explicitly connected itself with the "place of the Gods" (Teotihucan), to the Toltecs (as both "people of Tula" and as a more general phenomenon) as their forebears in civilization, and to the Chichimecs of the northern region as their forebears in militaristic nomadism (Berdan 2014:33-39).

In central Mexico, there was an increasing emphasis on time as both a cyclical and linear phenomenon (elaborated in a later section), as expressed through monthly rituals as well as a major semi-centennial event, the New Fire Ceremony (Elson and Smith 2001, Taube 2000: 294-296). Religio-cultural values of militarism, bravery, and courage for men, women, and deities are evidenced in both recorded myth and in the material culture of the Templo Mayor (López Austin and López Luján 2009a). Brumfiel (2001) has argued that the militarist emphasis was stronger in institutional religious practice in the Aztec capital, though also shows that this facet of religion also transferred to commoner practice. As I explain in the next section, militarism was connected to self-sacrifice and death, which were in turn related to creative powers; destruction was seen as fundamental to creation and renewal (Taube 2000:302, Brundage 1985:55-178). There is evidence that Aztec religio-political expression continued to be fundamentally integrative in the local/global sense established by the Zuyuá system (López Austin and López Luján 2000). For example, the ceremonial complex in Tenochtitlan included two major patron deities, but also included a temple dedicated to the patron gods of the city-states that they conquered (Tena 2009).

In sum, then, religio-political history in pre-Columbian Mesoamerica can be understood as a series of centralizations and dispersals of political authority. Increasingly centralized Mesoamerican polities were inevitably confronted with difference, both in terms of politics and in terms of notions of the sacred. The resolution of difference was *integration,* with centralized religio-political authority coexisting with local dynastic lines. This process was concurrent with the sublimation of various local deities to the pan-Mesoamerican Feathered Serpent cult, a phenomenon that nevertheless allowed for substantial local expressions of the divine. In contrast to Christian strategies of centralized authority at the time of the conquest, which at this point in history was far more concerned with eradicating "false" religion, Aztec institutional religion could integrate multiple religious "truths," while still enacting hierarchies.

Following the conquest of Mexico, Aztec traditions challenged and inspired Spanish evangelist tactics. The trajectory and essential characteristics of Mesoamerican religious expressions continue to exist within Mexican Catholicism, probably owing in no small part to the fundamentally integrative nature of Mesoamerican religio-political attitudes (Cervantes 1994). Just as significantly, the global colonial experience fundamentally shaped the Church (Pardo 2006), and colonial experiences such as these contributed to an internal Christian reckoning. In what follows I will delve more into the specific features of Aztec state religions at the time of the conquest, followed by a brief sketch of the ways that early colonial Spanish Christianity interacted with the religious ideas in place at the moment of contact.

2.4 AZTEC ENGAGEMENTS WITH THE SUPERNATURAL

Part of the reason that I argue that Aztec religion was comparable with Christianity at the moment of conquest is that the Aztec system had State-level (institutionalized), individual, regional, and community-level manifestations that entailed different, but related, engagements with the supernatural. Religion and government were combined in the bodies and duties of the supreme rulers, the Aztec emperors, yet there were specialized positions for administrators, bureaucrats, tax collectors, military leaders, priests and priestesses, midwives, and scribes (Berdan 2014:89 and 234-236). As was the case for their European contemporaries, religion, science and the arts were fused in the Aztec world (Aguirre Beltrán 1992, Berdan 2014:215, Andrews and Hassig 1984:29-35). Tenochtitlan and other Mesoamerican cities (including Tula) were characterized by central ceremonial precincts that featured buildings with related, but not identical, functions: these could be administrative, dedicated to the gods (temples), or related to public spectacles that in turn had sacred elements (ballcourts), etc. Outside of major ceremonial precincts, different neighborhoods and conquered city-states had their own patron deities that interlocked with state religion. Residences (including commoner houses, palaces, and housing compounds) evidence religious practice in the home (Berdan 2014:243, Smith 2012:217-219). In other words, all of society had a marked but heterogeneous engagement with the sacred; but some buildings and specialists, i.e. temples, residential altars, and priests/priestesses (just as in Europe) were devoted *exclusively* to the gods.

Both commoners and elites participated in public ritual (the term "ritual" is defined and explored in Chapters 1 and 6). Offerings, sacrifices, celebrations, and fasting took place in commoner and elite homes, in public processions, in public plazas, at temples, and in massive state-sponsored monthly festivals dedicated to particular deities. The nature of the articulation of the State's (i.e., institutionalized) religion with respect to "commoner" religion is unclear; many (e.g. Smith 2011) have argued that commoners adopted certain elements of state practice, while Brumfiel (2001:288) argues that it is equally plausible that the Aztec State coopted commoner practice. What is clear is that commoner and elite practices shared certain important emphases, in particular an emphasis on nourishment and agricultural concerns (Brumfiel 2001, Taube 2012). I understand State-level and commoner notions of the sacred as part of an integrative continuum, as explained in the section above, rather than as opposing poles (see also Berdan 2014:243).

A salient feature of Aztec engagements with the sacred was an intense preoccupation with time and space. The primary symbolic association of the Templo Mayor, the principal temple of Tenochtitlan, is of an *axis mundi*, or a centralized location where vertical and horizontal space converge with time as another dimension; the center space was conceived of as the "navel of the world" and as a "fifth direction" (see Figure 2.1 and Eliade, 1963, Lopez Austin and Lopez Lujan 2009, Tena 2009:16,). Horizontal space was divided into four quadrants; the east was known as *tonatiuh iquizayan,* or "place where the sun rises"; north was *mictlampa*, "place of the dead," west was the "region of women" and of the death of the sun, and south was the region of thorns (Aveni, Calnek and Hartung 1998:292-293, Berdan 2014:223). There were thirteen or nine levels of heaven or "skies," depending on the source and time period (Tena 2009:16). The underworld (*inframundo*) consisted of eight levels. The earth, where people lived, was conceptualized as the back of a giant sea monster or an enormous crocodile that rose out of the water (Tena 2009:16).

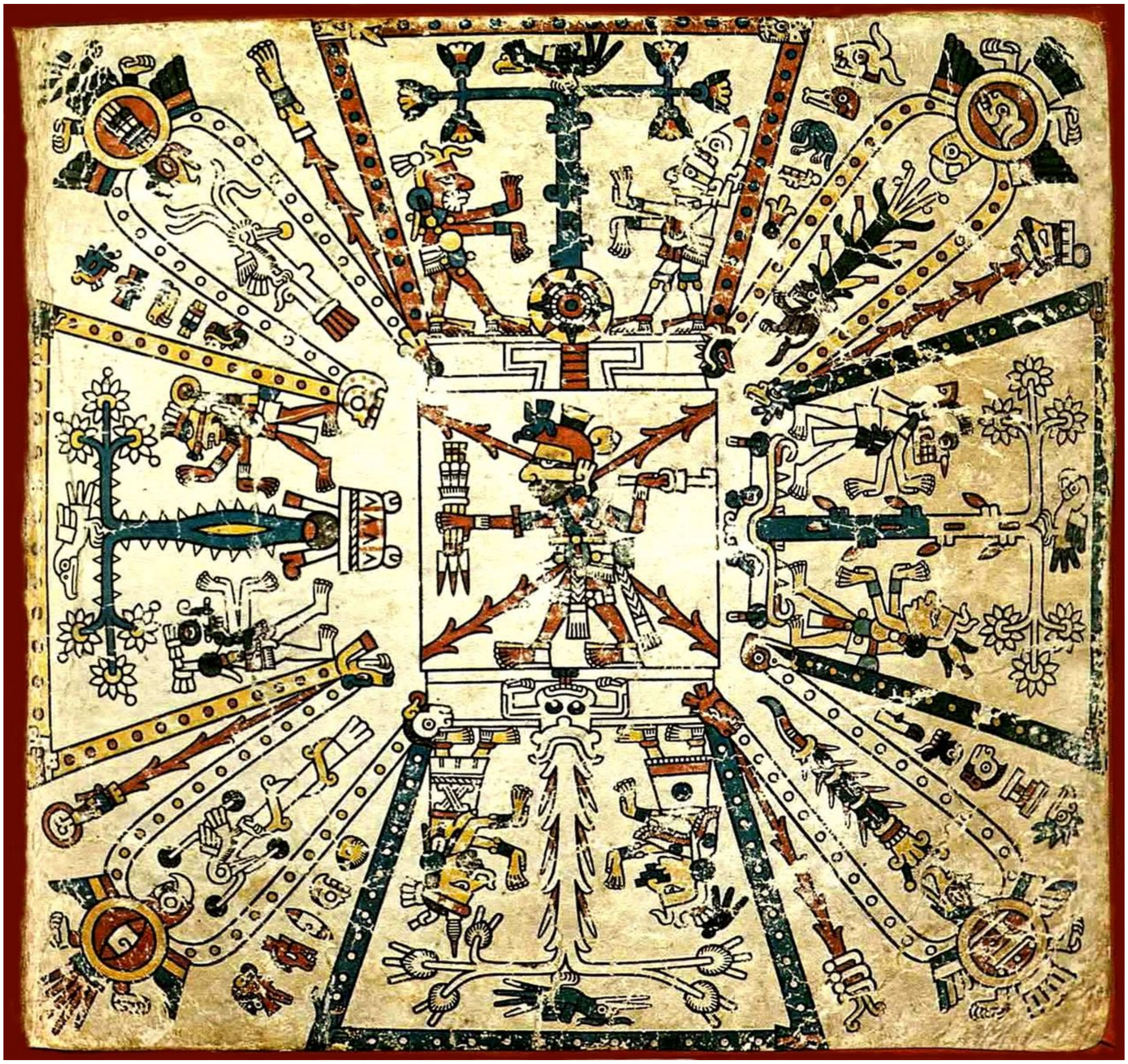

Figure 2.1: Aztec conception of the four cardinal directions and the center of the universe. (“Fejérváry-Mayer Codex, fol. 1: 2015”).

The ritual calendar was the basis for religious life, marking cyclical feasts and special events that celebrated particular gods and goddesses within the pantheon. Briefly, the solar or agricultural calendar (*xiuitl*) consisted of eighteen months of twenty days, with five “unnamed” or “worthless” days at the end of the solar year. The Aztec ritual or divination calendar (*tonalpoalli*) consisted of thirteen days (numbered 1-13) and twenty day-names. The days and numbers intersected with each other, creating twenty months of thirteen days each. Ritual festivals dedicated to particular deities were celebrated in public ceremonies each month (Durán 1977, Sahagún 1997), during which the Aztecs celebrated particular gods by performing hymns, dances, and special rituals in their honor (see Sahagún 1997[1590]:55-67). In ceremony, gods were represented by *ixiptlas*, or the invocations of gods, that could be manifest in stone representations, human sacrificial victims or priests, or vegetable (normally amaranth) form (Clendinnen 1991:252). The two calendars intersected with one another in sequence, aligning at the same point only once every fifty-two years. This event was the occasion for a New Fire Ceremony, in which worldly possessions were ritually destroyed (Elson and Smith 2001).

The Aztecs honored a large and diverse pantheon of deities (Clendinnen 1991:167). Rafael Tena (2009:25) identifies three principal deity "groups": (1) creator and provider gods; (2) fertility gods (including both human and agricultural fertility) and gods of pleasure; (3) gods of cosmic energy, war, and human sacrifice. In Tena's taxonomy (2009), these groups consist of seventeen "complexes" of principal deities that are in turn closely associated with several more gods and goddesses. The gods often had both male and female manifestations. Various sources (e.g. Durán 1971, Sahagún 1997) detail the costumes and accouterments of many of the gods and goddesses as well as songs and celebrations in their honor. Tenochtitlan is identified with the patron deities that graced the top of the Templo Mayor, Tenochtitlan's main temple. These were Tlaloc (the rain god) and Huitzilopochtli ("hummingbird from the left," the warrior god). The Feathered Serpent was also featured in carved stones that graced the temple (López Austin and López Luján 2009a). However, Rafael Tena (2009) lists at least nine more patron deities for the capital city (Tena 2009:15). Also of note, Tenochtitlan featured a space for the worship of *Coacalco* deities- patron gods of the cities that the Aztecs had conquered (Tena 2009:15). This is in keeping with the idea that Aztec state religions were integrative.

Sacrifice was a salient element of Aztec religious practice, and some explanation of this tradition is warranted given its relationship with later extirpation campaigns. In fact, the sacrificial act that was most common in Mesoamerica was autosacrifice (Klein

1983:293), usually through bloodletting by using thorns to puncture the tongue, earlobes, or other body parts; the blood could then be collected on paper and given as offerings to the gods, or as nourishment for "fire and the sun" (Sahagún 1997[1590]:79). The theme of humans as nourishing the gods and the gods nourishing humans in turn is pervasive (e.g. Tavárez 2011:43), and interrelated with Aztec preoccupations with subsistence and agricultural concerns (Brumfiel 2001:288). Captives could be flayed or sacrificed by having their hearts cut out of their chests, as happened during the lighting of the New Fire and during other specific rituals (Clendinnen 1991:238). Vegetable effigies made of amaranth were also "sacrificed" and then eaten (Clendinnen 1991:252). In all cases, sacrifice and autosacrifice tied into notions of bravery and courage that mirrored the original courageous sacrifice of the gods: the god Nanahuatzin threw himself into flames to become the sun (Taube 2000: 302). Aztec, Toltec, and Teotihuacano warriors were associated with butterflies or moths, a metaphor probably related to the self-sacrifice of moths to flames (Taube 2000: 302). Women who died in childbirth—sacrifice to create new life—were exalted as warriors (e.g. Clendinnen 1991:176). Thus, fire, sacrifice and the warrior cult were integrated facets of a moral code that was tied to ideas of destruction, renewal, and creation.

Sacrifice was related to human, vegetable, wooden, and stone *ixiptla*, which are often interpreted as "representations" of gods (e.g. Brundage 1985:45). However, Inga Clendinnen (1991:253) has argued that these are more correctly viewed as "god-presenters," or "that which enables the god to present aspects of himself." *Ixiptlas* - especially in their manifestations of stone "idols," were the focus of much of Christian friars' concerns and horror, since the friars saw them as "transparent visual representations of non-human entities" (Tavárez 2011:38). In fact, *ixiptlas* facilitated (but were not the object) of worship.

Friars sometimes resorted to violence when they thought that they observed continuing Indigenous practices relating to *ixiptlas* and sacrifice, such as "idol-worship" and animal sacrifice, most famously in the case of Landa in the Yucatan (Clendinnen 2003). But there were also subtle accommodations during the period of evangelization. In what follows, I sketch a brief history of the Spanish conquest and the main religious interactions in the New World.

2.5 SPANISH RELIGIONS IN EARLY NEW SPAIN

The earliest native contact with the Catholic religious tradition arrived with the first Spanish expeditions to the mainland of Mexico. The Spanish justified the conquest by succeeding in two ventures: the Christianization of Indigenous peoples, and the extraction of resources for the Crown. Nevertheless, primary documents reveal the conquistadors' ambivalent attitudes toward Indigenous religions: they were alternately admiring and horrified (e.g. Diaz de Castillo 1963). Cortés replaced Indigenous statues ("idols") with Christian crosses, but entrusted the care of the cross to the same Indigenous priests who had been the caretakers of the statues (Schwaller 2011:57). Cortés even went so far as to suggest that some Indigenous temples be preserved for posterity (Cuevas 1942:202). However, Cortés also initiated the mass conversion of the new territory: he petitioned the Crown to send mendicants to the newly conquered territory to begin the conversion of the Indigenous peoples.

The first Franciscan friars, known as The Twelve, arrived in New Spain in 1524 in the first wave of an ambitious conversion project. The Franciscans garnered the lion's share of missions and monasteries in central Mexico, including the most important cities at the time of the conquest (Ricard 1966:61-82). They were followed swiftly thereafter by the Augustinians and the Dominicans. Franciscans continued to dominate the central portion of modern Mexico, while the other orders were more important in the provinces (Ricard 1966:61-82). Establishments north of Tula were generally Augustinian, those to the south (in modern Oaxaca state) were generally Dominican; and new establishments to the West (modern Jalisco state) were also Franciscan.

Modern scholarship often cites a document known as *The Aztec-Spanish Dialogues of 1524* to frame the attitudes of both Indigenous nobles and Indigenous priests, as well as those of the Spanish friars. In the document, The Twelve try to explain the basics of an alien religion, an alien Pope, and an alien king by whose authority they have come to New Spain. The following forms part of the response of the friars' Indigenous interlocutors:

> *Have we, perhaps, been negligent in doing things? Oh where, by chance, are we truly to go? Indeed, we are common people, we are destructible, we are mortal. Oh, indeed, let us die. Oh, indeed let us perish, since, indeed, the gods have died!*
>
> - The Aztec-Spanish Dialogues of 1524 (Klor de Alva 1980:118-119).

Of note in the Spanish side of the dialogue is the attempted explanation of a single god who is wholly good—but who nonetheless has created a devil, who is wholly evil. This strict good/evil dichotomy—the core of the mendicants' obsession with the eradication of diabolism—was a totally foreign concept to the Aztecs, whose large pantheon incorporated deities that could effect both good and evil (Cervantes 1994). As adherents to a theology that incorporated multiple gods, particularly of regions that they had conquered, they appear to be genuinely amenable to hearing about and knowing the god of their conquerors, but cannot understand why the gods that have guided them throughout the known history of the world should be destroyed, abandoned, and shunned (Lockhart 1992: 205-206, Klor de Alva 1980). They try to persuade the Friars to allow them to keep their old gods even as they accept the new, while the Friars reject such appeals as "devil-worship" and reiterate the tenants of the Spanish doctrine.

The earliest mendicant arrivals were idealistic, hoping to instill Christian doctrine in newly-formed communities of people that were sometimes intended to be pure Utopias, modeled on the ideas of Thomas More, as was the case of the Spanish friar Vasco de Quiroga and his "hospital," or ideal community, of Santa Fé (Gómez 2001, Gibson 1964:99-100). Many of the religious understood the lay Catholicism of their home country to be corrupted and pagan (Christian 1981:4), and saw lay Spaniards and often conquistadors as corrupt and sinful (Ricard 1966:52). The New World and its Indigenous inhabitants thus formed a potential *tabula rasa*, in which a new perfect society could be realized on Earth (Burkhart 1989:5, Clendinnen 2003:51; cf. Ricard's 1966:284 use of the term). These goals aligned with what Gibson considers a fundamentally Erasmian humanism of the time (Gibson 1964:99-100; see also Cervantes 1994).

Nevertheless, the realities of the conversion process were much more complicated. Indigenous societies, of course, already had religio-political and geographical systems in place, with established hierarchies and entrenched morals and values. Though the establishment of Catholic parishes began around 1520 and was mostly complete, in central Mexico at least, by the 1540s (Lockhart 1992:206), the mendicants were quite few in number and in practice had to rely on these established pre-Columbian systems to effectively administer to the Indigenous populations (Gibson 1964:101-102). James Lockhart (1992:207-208) argues that there is evidence to suggest that in some cases, the local people themselves made decisions regarding which religious order would administer religious services in their towns. These decisions appear to have been politically-based preferences that were made as deliberate contrasts with rivals: if one town had a Franciscan monastery, for example, its rival might build a church and invite the Dominican order to minister to the people (ibid).

Ricard (1966:284) contended that friars' more accommodative practices were a nineteenth-century phenomenon, but most other scholars disagree, and primary sources are far from straightforward on this subject (e.g. Andrews and Hassig 1984; see also Alarcón 1984 and Durán 1971). Certainly, friars had to contend with the tasks of ethnographic understanding as well as translation from Spanish into native languages, a task that they clearly understood to be a theological minefield (see Hanks 2010, Ricard 1966:39-60). Friars also recognized in Indigenous religions certain uncanny similarities to their own practices; these included a Eucharist-like practice of "eating the flesh of god" in the form of amaranth, as well as rituals that bore resemblances to Christian traditions such as fasting, baptism, offerings, marriage, and penance (Cervantes 1994, Durán 1971, Gibson 1964:100, Pardo 2006). Friars themselves sometimes integrated Mesoamerican religions into Christianity in a much more deliberate fashion; Friar Pedro de Gante, for example, adapted Aztec dramas to Christian themes (Andrews and Hassig 1984:18). Moreover, it is important to understand that Spanish friars did not reject Aztec religions outright; instead they reinterpreted Aztec religion within a Christian rubric, transmuting Aztec gods into the Devil (Andrews and Hassig 1984:18). It is difficult to surmise whether Indigenous peoples would have been injured by this reframing alone, given that their concept of divinity did not involve notions of sin[5] or dichotomies of good and evil (Cervantes 1994). Rather, the clear burden of the reframing seems to have been the elimination of the overt signs of State religions, which I explore in greater depth below.

As the Church became more established, it often created new centralized villages with idealized, gridded plans in a system known as *reducción;* these new towns gathered people together from dispersed areas. William Hanks (2010) understands this process to have entailed the coordinated "ordering" of space, language, and behavior, effectively molding Indigenous worlds to Spanish notions of propriety through practice. However, various studies have questioned how effective this system was in reality (e.g. Graham 2011:239-244). For example, Steven Wernke (2007) concluded that in the Andes, locals probably experienced this system as a continuation of a centripetal trend of increasing urbanization that was already in motion as a result of Inka imperialism. Setha Low (1995) has shown that the idealized ordering of space that is generally attributed to Spanish religious and political systems in fact had significant Indigenous input. For example,

[5] Rather than sin—a strict codification of behaviors—Indigenous religions seem to have emphasized discipline, moderation, and codified forms of excess for behaviors such as sex, drinking alcohol, and gambling (see Clendinnen 1991:190 on pulque, 143-6 on gambling, 164-167 on sexuality; also refer to Sahagún 1997). Clendinnen's (1991:237-238) subtle description of Nahua "channeling" of forces echoes, to my mind, Foucault's (1990:50) description of energeia to the Greeks: the pleasures were forces that were inherently excessive and needed to be controlled, but not inherently good or bad in the Christian sense, and thus there was not a need to forbid whole swaths of activities such as gambling.

Tenochtitlan was planned in quadrants, with the ceremonial precinct (including a plaza) at its center. The Aztec city plan in turn influenced the shape of the colonial city (Aveni and Hartung 1998, Low 1995).

Initial Spanish religious violence was directed toward destroying what friars took to be the transparent signs of Mesoamerican religion: the painted books, the stone representations of gods, temples, human sacrifice, and the Indigenous priesthood (Gibson 1964:100)—though autosacrifice continued (Andrews and Hassig 1984:25). The Church was largely successful in these superficial attempts to eradicate Indigenous religions (ibid). But in the years following the conquest and the initial conversions (which sometimes took place through mass baptisms, see Cervantes 1994) the friars saw signs of what they understood to be continuing idolatry (e.g. Clendinnen 2003:73). The interpretation on the part of the friars, i.e. that Indigenous peoples continued to persist in "devil-worship" despite their introduction to the True God, led to what the friars considered to be outright spiritual warfare, with Indigenous peoples as the enemies (Tavárez 2011:3). The results of this "warfare" were mass extirpation campaigns, executions, formal means of assuring church attendance, mass book burnings, and the institution of the Inquisition in the New World (Gibson 1964:117, Klor de Alva 1982, Tavárez 2011).

As much recent scholarship indicates, the persistence of Mesoamerican religious notions and the perpetuation of "idolatry" cannot be attributed in any straightforward way to a lack of authentic Indigenous engagement with Christianity (e.g. Graham 2011:298, Hanks 2010:8). Rather, what the friars called "idolatry" was just one part of a much larger body of Indigenous responses to and engagements with Christianity, the sheer scope of which is popularly underestimated. My research contributes to an understanding of the materiality of that process (see also Graham 2011). Previous historical, archaeological, and linguistic research has also revealed how this vast Indigenous contribution came to be. In what follows I present some of the broad framings that scholars have used to come to terms with the colonial religious encounters, and I situate my own research in those debates.

2.6 THEORIZING COLONIAL RELIGIOUS CONVERSION AND RELIGIOUS PRACTICE

The primary documents for understanding the colonial religious conversion were compiled by sixteenth- and seventeenth-century mendicants (e.g. Alarcón 1984, Durán 1971, Landa 1978, Las Casas 1992, Mendieta 1870, Sahagún 1961, 1997; Torquemada 1969, Vetancurt 1971) as well as men who had participated in the conquest (e.g. Cortés 1986, Diaz 1963). Louise Burkhart (1989:3) has succinctly summarized the tensions on the mendicants' side of the colonial process as "an odd mix of medieval theology, which insisted that all human souls were equal, Renaissance humanism, which suggested that something of worth might be found in another way of life, and Catholic intolerance, which justified—or excused—the study of pagan things on the grounds of facilitating their eradication." As a corpus, the primary sources contain all of the tensions, contradictions, and uncertainties that are common to (and partially enable) the various interpretations of secondary sources. Colonial documents authored by Indigenous peoples have received increasing attention. James Lockhart's (1992) work, *The Nahuas After the Conquest*, is an important synthesis of the known corpus that was written in Nahuatl during the colonial period (Cline 1993:ix); these documents continue to come to light (see Restall 2003a for one recent comprehensive review).

Based on Spanish and Indigenous colonial documents, many scholars have produced groundbreaking analyses, interpretations, and syntheses of the religious experience in colonial Mexico, out of which several interpretive themes emerge. Most of these implicitly rest on these scholars' evolving understandings of the nature and limits of colonial power (which I outlined in Chapter 1). Because these theoretical leanings influence the interpretation of documents and data, in this section I outline the major themes to emerge from secondary literature on colonial religion and situate my own theoretical convictions and data within that body of research. (Due to the general paucity of archaeological engagement with colonial religion [but see Córdova Tello 1992, Fournier 1990, Graham 2011, Vázquez Cibrián 2013] I situate myself within the secondary ethnohistorical literature rather than archaeological literature.) In a short section, Elizabeth Graham (2011:289-291) provides a succinct overview of approaches to framing the conversion, which has partly inspired my organization here.

Theme: The invisible war. Robert Ricard's (1966 [1933]) scholarship was the foundation for colonial religious studies in Mexico. Ricard's basic thesis was the success of the church: "at least in the field of religion, therefore, a complete rupture occurred" (1966:286). Ricard also claimed that there were only "exceptional" cases of resistance (Ricard 1966:264, 284)—though his contemporaries (such as Manuel Gamio) disputed his interpretations (see Ricard 1966:277). Ricard's interpretation implicitly rested on adopting the yardstick that the friars themselves used to measure the "successes" of the spiritual conquest. David Tavárez succinctly summarizes the problems with this theoretical stance: "take [the friars] at their word…would be to adopt several troublesome assumptions: that the stakes in this war were evident and transparent to both sides, that native idolaters sought to present a united front against Christianity, and that this united front depended on an antipodal version of Christianity implanted by the Devil in the natives' less discerning minds." In other words, Ricard's scholarly legacy[6] set up and naturalized a simplistic domination/resistance binary that even his opponents (see the "core/veneer" model below) implicitly adopted, even while arriving at conclusions opposite to his. I situate this dissertation within a body of more recent scholarship that emphasizes extremely complex and non-unified processes of both domination and resistance. In Chapters 1, 5, 6, and 7 I use material culture and historical data to emphasize that Spanish institutional religion did not represent a coherent strategy of domination; Spanish hegemony was limited,

[6] Parts of Ricard's research were emphatically not valuable. See e.g. Ricard 1966:277, "Who can flatter himself that he knows what takes place in the dark minds of the natives? They themselves certainly do not see clearly among the ideas and feelings that guide them." (Also cited in Clendinnen 1990.)

fragmentary, and highly reactive to Indigenous religious prerogatives. On the other hand, my research and modern ethnohistorical studies indicate that Indigenous engagements with Christianity involved active participation (Graham 2011) as well as "epistemological" resistance (Tavárez 2011:276): this is a framework that is much more complex than notions of simple resistance or superficial acceptance can encompass (see Graham 2011:289-290, Tavárez 2011:276). In other words, Indigenous subjects actively engaged in Christianity using ontological rubrics drawn from millennia of religious ideas and practices. In this dissertation I show that while Indigenous-tradition material culture may not have been intentionally used to reshape Christianity, it nevertheless had a similar effect (Chapters 1, 6 and 7).

Theme: Syncretism Mounting evidence of Indigenous "idolatry," resistance, and specifically Indigenous contributions to Mexican Catholicism (manifested in present-day Mexican Catholicism in the Day of the Dead festival, the Guadalupe cult, the cult of the Saints, various feasting traditions, a significant portion of material culture related to ritual, elements of the physical landscape, religious art, and myriad other traditions—see e.g. Pardo 2006, Tavárez 2011:270, Burkhart 1990, 1998) led scholars to propose a model of syncretism (e.g. Andrews and Hassig 1984). Inga Clendinnen (1990:109) called syncretism "that familiar mix-and-match model" because it typically focuses on the outcome of the combination of two originally coherent sets of social forms (see also Graham 2011:72, Hanks 2010:94). In contrast, modern research (including this dissertation) utilizes a diachronic, process-based approach that focuses on social change, rather than on outcomes (see Chapter 1, 5, 6, and 7; see also Bourdieu 1977, Hanks 2010). In this dissertation I emphasize that neither Spanish Christianity nor Indigenous religions survived the colonial encounter intact (nor were they static to begin with). Indigenous contributions to that process are not "survivals," but conversely the shape of modern religious practice in Mexico would be impossible without them, as I argue in Chapter 6. Further, syncretism requires typologies and trait lists of two perfectly separated spheres; that is, strictly

Spanish or strictly Indigenous material or social culture (Clendinnen 1990:109). In Chapters 6 and 7 I emphasize that Spanish and Indigenous people adopted one another's material culture quickly and easily, but these objects were multivalent. Indigenous objects could be resignified (see Chapter 1) in Spanish ontologies, and vice-versa. This process implies multiple and unstable meanings, rather than the stable categories that the term "syncretism" implies.

Theme: Superficial conversion, or the "core-veneer" model. Another proposed explanation for the colonial religious encounter was the "core-veneer" model, or the notion that Indigenous peoples acceded to Christianity out of coercion, but in fact maintained their own pre-Columbian beliefs. To my knowledge, Charles Gibson was the first proponent of this idea (Gibson 1964:98-135); Jorge Klor de Alva (1982) later produced an impressive typology of indigenous responses to the "spiritual war" that emphasized this model as the most common Indigenous response. The problem with this model, as Graham (2011:290) sees it (and as I also see it) is that active engagement with Christianity is a near impossibility within this framework. This is primarily because it effectively uses the friars' notions of what constituted "proper" religious engagement as a yardstick. As Graham points out, Indigenous children grew up in the Christian faith very shortly after the conquest; it is disingenuous to understand their engagement with that faith as superficial. "Maya engagement with Christianity was anything but superficial or short-lived, even if it was partial, contradictory, and put to uses never envisioned by the friars" (Hanks 2010:8). More recent scholarship, particularly Louise Burkhart's (1989) *The Slippery Earth*, has slightly modified this model. Burkhart frames the persistence of Indigenous traditions within Marshall Sahlins' (1981) ideas regarding the "resistance of culture," or the idea that cultures in contact reinterpret new events and ideas in light of their own history and cultural logic (see also Wernke 2007). In this dissertation I argue that in Tula there were multiple reasons that Indigenous peoples readily adopted Christianity, including political reasons (Chapter 5). I argue that continuing Indigenous traditions within Christianity cannot be seen as “survivals” (i.e. an authentically Indigenous “core”) but their long religious history could not help but influence the shape of Christianity (Chapter 6). Finally, to refashion one of Graham’s phrases for my region of study, I take the Indigenous groups of Tula to be Christian because they said that they were (see Graham 2011:290-291).

Theme: mutual misunderstandings and problems of translation. Historians and linguists have fruitfully explored translation, both social and linguistic (e.g. Hanks 2010, Burkhart 1989). As mentioned above, Ricard explored how difficult this task was to the friars, and how the process itself was a minefield of potential penetration of idolatry (Ricard 1966:39-60, see also Durán 1977). Fernando Cervantes (1994) discusses the difficulty of translation of concepts such as sin, good and evil, the Trinity, and the saints as intermediaries rather than as a pantheon of gods, on the part of the friars. On the Indigenous side of the equation, the true meaning of the calendar as an organizing principle, the nature of their relationships with sacrifice, and the notion of an essence that existed in animals and non-animate objects were not likely fully understood (see also Gibson 1964:100-101). In Chapter 6, I argue that colonial book inventories from Tula show that friars had to continually adapt to local languages, even centuries after they were well-established there. In Chapters 4, 5, 6 and 7 I also show that Spanish mendicants had to adapt to the material culture, landscapes, languages, and practices of the New World, a cultural translation that (at least from the friars’ perspectives) constantly imperiled the boundaries of their “true” religion.

Theme: “State religion with its head cut off.” The notion that the colonial religious process served to eliminate outward signs of state religions, which in turn fostered a proliferation of popular religious traditions, is fully explored in Nicholas Griffith’s (1996) study of the colonial Andean context. It is also hinted at in studies of central Mexico (e.g. Tavárez 2011). Andrews and Hassig (1984) point out that the main loss of the early years of the conquest was the institutional aspect of Indigenous religions, i.e., the loss of the Indigenous priests, their State support, and of the temples, as well as elaborate public festivals, though these were transformed into Christian practices. However, primary sources (e.g. Durán 1977) indicate that “idolatry” entailed widespread everyday practices in homes, markets, and other non-State-sponsored sites. Finally, one of Gibson’s (1964) general theses is that Spanish institutions were generally dependent upon existing pre-Columbian structures to be able to administer effectively at all; and Spanish religious institutions depended in turn on the governmental institutions both financially and geographically. Earlier in this chapter I argued that religion was for both societies a “total phenomenon” with institutional aspects. In Chapter 7 I argue that because friars mainly focused on eradicating the institutional aspects of Indigenous religions, there was ample room for the interpenetration of the two religions as total phenomena—for example through foodways.

2.7 CONCLUSIONS AND THE CONTEXT OF THE PRESENT STUDY

This dissertation is situated within and indebted to a broader body of scholarship that has used material culture to challenge our assumptions regarding the Aztec and colonial periods in central Mexico (e.g. Brumfiel 1991-2001, Kepecs and Alexander eds. 2005, Rodriguez-Alegría 2002-2010). Historical archaeology in this region has made it clear that Indigenous peoples continued to adapt and innovate within their own technological traditions after the conquest (Millhauser et. al. 2011, Rodríguez-Alegría 2008). We know that Indigenous peoples continued to innovate within their own ceramic traditions (Hernández Sánchez 2012, Rodriguez Alegría 2002). We also know that Spanish people deliberately adopted Indigenous-tradition service wares and other aspects of Indigenous material culture, not out of necessity or scarcity, but out of deliberate engagement with preexisting (and continually evolving) Indigenous traditions (Rodriguez-Alegría 2005b). Ongoing investigations clarify that Indigenous engagement with Christianity is far more complex than simple domination/resistance models allow; for example, it is clear that Indigenous Maya subjects in Belize continued some form of Christian practice even after expelling Spanish friars from Tipu (Graham 2011).

Previous research at colonial religious sites in Mexico (Córdova Tello 1992, Fournier 1990, Vázquez Cibrián 2013) have generally emphasized the top-down power of the colonial Spanish Church. Fournier (1990) adopts a specifically Marxist stance toward these tendencies, framing colonial religious buildings and ceramics as material evidence of the colonial superstructure. William Hanks (2010) employs material culture (colonial landscapes) to build his argument of a coherent program of *reducción*. Ricard (1966:286) framed the supposed successes of the Church in terms of material culture: "[The friars] destroyed temples, suppressed all pagan feasts, banished idols, and trained children to track down all pagan ceremonies which the Indians still practiced in secret." George Kubler took a similar stance (2012). These studies form an important part of our ability to understand the very real violence inherent to the colonial project and institutionalized religion, but they also tacitly accept a "spiritual warfare" paradigm—and ultimately determine that Indigenous subjects lost the war (but cf. Hanks 2010:365-368).

In this dissertation I have two basic positions toward religious change, grounded in my observations of material culture at Tula (Chapters 4, 5, 6, and 7) and the stance on power outlined in Chapter 1. First, I follow Rodríguez-Alegría (2002, 2005a; see also Graham 2011:72) in his assertion that, in practice, colonial power structures did not form a coherent ideological program (cf. Hanks 2010). This dissertation specifically questions the ideological coherence of *religious* institutions, revealing them to be unstable in practice. As I emphasize throughout this dissertation, the material world was imbued with religious meaning before the arrival of the mendicants. The Spanish mendicants did not (and could not) erase the preexisting meanings of the material world that they encountered in Tula—i.e. Tula Grande (see Chapters 3 and 5), methods of burying the dead (Chapter 6), and foodways (Chapter 7). Material and historical evidence shows that friars in Tula actively created buildings that incorporated Indigenous modes of worship, became highly proficient in Indigenous languages, and facilitated Indigenous enthusiasms for theater and celebration (Chapter 6). These data show that, contrary to the “invisible war” tropes, the friars themselves did not have a stable, coherent ideological position vis-à-vis Indigenous languages, landscapes, and social worlds.

Secondly, in this dissertation I seek to frame Indigenous subjects as active participants in Christianity. As I pointed out in Chapter 1, in Tula there were various reasons (including factionalism and legitimacy) to convert to Christianity during the earliest post-Conquest years, and furthermore Aztec religion was incorporative of new gods. Violence, resistance and dissent formed an important part of the colonial religious experience (e.g. Tavárez 2011), but most Indigenous peoples did ultimately become Christian. They built and decorated the new churches (Kubler 2012, Edgerton 2001), formed Christian community groups in the form of brotherhoods (*cofradìas*, see Lockhart 1992:218-229), staged religious plays (Burkhart 1998), celebrated holy days (Clendinnen 1990), buried the dead (see Chapter 6), married (occasionally: see Cline 1993), baptized their children, and sent their children to Church schools. It is, for the most part, difficult to know how Indigenous people felt about this participation (and indeed there was no unified stance), but to frame all of the three centuries of that colonial engagement as an unthinking response to coercion is deceptive (see Graham 2011:288-291). Instead, I argue that it is important to allow for proactive Indigenous participation in the Church, not least because the material record (Chapters 4, 6, 7) and historical record (e.g. Lockhart 1992:218-229) reveals this to have been the case in Tula. This stance runs counter to the “invisible warfare” tropes in that it does not frame all Indigenous participation as resistance—at least not in the sense generally meant by that term. It also runs counter to the “core/veneer” tropes because I do not interpret my evidence to mean that Indigenous peoples were fundamentally non-Christian; rather, they incorporated their ontological understandings of the supernatural, culled from millennia of practice, into the new religion.

I argue in Chapter 5 that Aztec religio-political understandings of Tula shaped the colonial manifestations of the Church in that city. Both the Aztec and colonial era in Tula were inextricably tied to the earlier Toltec past: as I show in Chapter 4, Aztec and colonial structures were built within and on top of preexisting Toltec structures. To better frame that observation, and to situate my own research within the archaeological tradition in Tula, I explain Tula's Tollan-phase past and its history of archaeological research in the following chapter.

CHAPTER 3: HISTORY OF RESEARCH

3.1 INTRODUCTION

Tula's past has generated curiosity since the Aztec-era peoples first began to collect antiquities there (Healan 2012: 98, Umberger 1987:72) in the twelfth century. Archaeological investigations began as early as the late nineteenth century. Though this dissertation is chiefly concerned with the Aztec and Colonial periods at Tula, those societies drew from over a millennium of social and material traditions drawing on the civilizations that preceded them (see Chapter 5). This chapter is therefore intended to ground the reader in the social and environmental setting in Tula. I also marshal previous research to explain early and more recent advances in academic knowledge of the site, which principally concerns Tula's apogee in the Tollan phase. In a final section, I discuss the early archaeologist Jorge Acosta's work related to Aztec occupations at Tula, reconsidering some of his published ceramic data in light of more modern refinements to Aztec ceramic typologies. This re-reading of Acosta shows that he may have overestimated the size and extent of early Aztec (Aztec II) activities in Tula. Most researchers who work in Tula observe that Aztec II materials have rarely been found outside of Tula Grande. The association of the ceremonial center with Aztec II ceramics is based in part on Acosta's work (e.g. Healan 2012:95). Instead, my reevaluation of Acosta's work shows that many of the ceramics in Acosta's work were not temporally diagnostic. In addition, Acosta himself noted that many of the ceramics that he uncovered were late Aztec (III and IV). This evidence forms part of my contention (in Chapter 5) that the Aztec occupation at Tula was chiefly the result of a general population boom in Mexico (Smith 2008:78) as well as a deliberate, late-Aztec religio-political strategy meant to create ties to the great Toltec civilization (Umberger 1987).

3.2 SETTING

The modern city of Tula de Allende, Hidalgo and the archaeological site of Tula are situated in Central Mexico at the confluence of two rivers: the Rio Tula and its tributary, the Rio Rosas (Diehl 1983:14). The Rio Tula forms part of the Rio Panuco drainage system (Cobean, Jiménez García, and Mastache 2012:23, Mastache, Cobean, and Healan 2002:17). Tula lies approximately 40 miles north of Mexico City, just to the northwest of the ring of volcanoes that surround the Basin of Mexico, where the Aztec and Teotihuacano civilizations flourished. It is part of the central Mexican *altiplano* (high plain), also known as the Central Plateau, which is bordered by the Western Sierra Madre, the Neo-Volcanic Axis, and the Eastern Sierra Madre (Cobean, Jiménez García, and Mastache 2012:23, Mastache, Cobean, and Healan 2002:17). The region has two major climate types: arid steppe and dry temperate lands. The former has an average annual temperature of 18°C/64°F and 400-650 millimeters (17.7-23.6 inches). The latter region has average temperatures ranging from 12°-17.5°C, or 54°-64°F, with annual rainfall of about 700 millimeters (28 inches) falling primarily during the rainy season from June to September (ibid). The 1000 kilometer-square region surrounding Tula is primarily mountainous, with some wide plains punctuated by volcanic outcrops (Mastache, Cobean, and Healan 2002:17-19).

The principal geological formations in the area are basalts, various types of limestone, and a broad plain to the east and north of Tula (the Tarango Formation) that is composed of clastic materials (Mastache, Cobean, and Healan 2002:20). The most common soil in the region in the alluvial areas is silt and clay; soils around higher-altitude regions can be thin or nonexistent (Mastache, Cobean, and Healan 2002:23). Primary materials for construction and tool making (basalt, rhyolite or *cantera*, kaolin, limestone, flint, calcite, and chert) were all available within the area (see map and key in Mastache, Cobean, and Healan 2002:20-21). Mastache, Cobean, and Healan (2002:17-40) provide a detailed account of the area's natural environment, plant uses, and irrigation techniques, to which readers should refer for more information.

The dry weather, soil characteristics, and high altitude of the region define a semi-arid landscape that had two major consequences in modern times and for pre-Columbian peoples: first, the widespread use of plants that are suited to a dry climate; and second, the use of sophisticated methods of irrigation for agricultural purposes (Mastache, Cobean, and Healan 2002:40). Regional studies utilizing pollen indicate that Tula and the surrounding area became increasingly dry over time, reaching a peak around 1000 A.D. This trend toward aridization may have been spurred in part by human activities (Mastache, Cobean, and Healan 2002:29-30). Nopal (*Oppuntia* spp), mesquite (*Posopis laevigata*), garambullo cactus (*Myrtillocactus geometrizans*) and various species of agave are naturally occurring and may be used for foodstuffs and (in the case of agave) textiles (Mastache, Cobean, and Healan 2002:237-274). Irrigation in the colonial era allowed for more intensive cultivation of other plants, such as maguey (especially in the late colonial period), maize, chenopods, and amaranth; researchers posit that many of these systems also existed in the pre-conquest era in Tula (Mastache, Cobean, and Healan 2002:26-33; 40, 237-274).

3.3 CONTEXT WITHIN MESOAMERICA

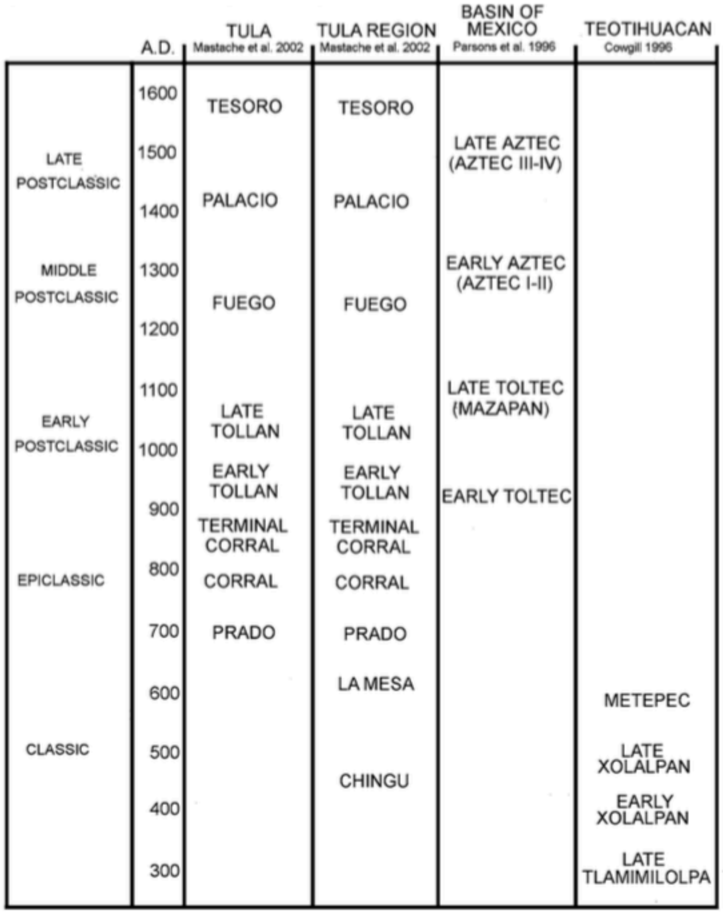

Figure 3.1 Chronological chart of central Mexico. (Healan 2012:58, Figure 4)

Tula is most famous as the capital of the Toltec civilization, which flourished there between approximately 900 A.D. and 1150 A.D. However, the region has been occupied since at least the early Formative period (800-500 B.C.); salvage excavations in the modern city of Tula de Allende have uncovered scattered evidence of Formative-period ceramics and a Formative-era burial (Healan 2012: 72). More substantial evidence exists for late Formative period sites (500-200 B.C.); at least four settlements have been uncovered in the

Tula area, one of which (La Loma) may constitute a late Formative-era regional center and a possible "gateway community" to late Formative centers further south (Healan 2012:72).

The Classic era (see Figure 3.1) is defined by the ascendency of the mammoth central Mexican city of Teotihuacan (200-600 A.D.). Like many other centers of the time, Tula's Classic-period occupation shows clear signs of either Teotihuacano colonization or influence (Mastache, Cobean, and Healan 2002:52). The most important of these Classic-era centers was a 2.5 km2 city called Chingú, located to the east of Tula. Chingú probably supplied important building materials for Teotihuacan because it was located at the intersection of a limestone source and an alluvial valley (Mastache, Cobean, and Healan 2002:52), and studies have shown that lime plaster used in the construction of some buildings in Teotihuacan came from the Tula region (Mirello et. al. 2011: 1138).

Pottery from Chingú is largely comprised of Oaxacan-style and Plain Orange types (see Mastache, Cobean, and Healan 2002:55). The Oaxacan affiliation of Classic-period sites in the Tula region is a major topic of current research, and is the subject of my colleague Haley Holt-Metha's doctoral research at El Tesoro (Holt-Metha 2014). For the purposes of this dissertation, it should be noted that the Classic-era Tula region was linked to major centers in the Basin of Mexico, and during this time people in the Tula region forged trade relationships with far-flung regions (such as Oaxaca and the Maya area) that are evident in the ceramic assemblages. However, no Classic-period settlements have been found in the area that comprises the Tollan-phase city of Tula (Healan 2012:73, Mastache, Cobean, and Healan 2002:55).

Teotihuacan declined in the seventh century, and its demise was an important event throughout the area that had formerly been under its control, including the Tula region (Healan 2012:75). After its demise, a ceramic complex known as Coyotlatelco arose and was present in Teotihuacan itself and throughout much of the Basin of Mexico and its periphery. Based on evidence from Coyotlatelco-phase settlements, there are researchers who note that Teotihuacan continued to be an important regional center in the early Epiclassic period (600 A.D. to 900 A.D.).

During the early Epiclassic, the Tula region was dominated by two distinct types of settlements. The first type was characterized by nucleated, defensively-located hilltop settlements, including sites such as El Magoni, La Mesa, Atitlalaquia, and Panoaya. The second type was an urban settlement called Tula Chico that served as the prototype for the later Tollan-phase site. Until recently, researchers had hypothesized that the hilltop settlements (La Mesa phase) were single-component sites that preceded the Tula Chico settlement (Prado and Corral phases; see Healan 2012: 77, Mastache, Cobean, and Healan 2002:60-71). However, most knowledge about the hilltop settlements has been based on surface survey (Healan 2012: 77). A more recent investigation of Cerro Magoni shows that the hilltop settlement had significant, multi-phase settlement (Anderson 2013: personal communication).

At present, Tula Chico, the ceremonial center during the Prado (650-750 A.D.) and Corral (750-850 A.D.) phases of Tula, is far better understood than the surrounding hilltop settlements. It also represents the first significant settlement at the ridge that would later form the nucleus of the Tollan-phase site. Tula Chico contains many elements that would later be copied on a grander scale at Tula Grande (Tula's major ceremonial center). Like the latter complex, its plaza contains two ball courts, two pyramids, and several large platforms (Diehl 1983:43-45, Healan 2012: 77). However, with the exception of this ceremonial center, most of the urban development that corresponds to this phase was eventually covered by later Tollan-phase construction (Mastache, Cobean, and Healan 2002:72). Tula Chico was likely one of two ceremonial centers; the other is probably located under the later Tula Grande center (Mastache, Cobean, and Healan 2002:74). Tula Chico is important because it demonstrates the foundations of the later Tollan-phase city. Evidence from Tula Chico points to extreme political and social change during the Epiclassic (circa 850 A.D.) when central Mesoamerica began to recover from the decline of Teotihuacan. One of the most curious elements of this period is that Tula Chico was looted and abandoned—much like the later ceremonial center at Tula Grande—and surrounded by an active, vibrant city without ever being covered or further destroyed (Mastache, Cobean, and Healan 2002:75).

The Tollan phase (during the Early Postclassic) is generally considered to be the most important occupational period at Tula, and is characterized by vastly increased settlements (Mastache and Crespo 1974). This phase came immediately after the partial destruction and abandonment of Tula Chico (Healan 2012:82). During Tula's apogee, the city grew to enormous proportions and eventually controlled a hinterland approximately 13,000 km^2, with a region of influence that extended far beyond this zone (Healan 2012:93-94). Though its adobe construction and limited surface architecture belie its vast scope, Tollan-phase Tula was a massive and densely packed city—among the largest and densest in Mesoamerica, with an urban extent was at least 16 km^2 (Healan 2012:100). The Archaeological Zone operated by INAH encompasses only about 1.1 kilometers of the former city (Healan 2012:56), meaning that the remainder of the Tollan-phase site lies beneath present-day urban developments.

During the Tollan phase, Tula's civic-ceremonial core was Tula Grande. This complex has been explored with the greatest attention, and is addressed in the later sections of this chapter. Tula Grande consists of two large ball courts, two pyramidal temples, several low platforms with colonnaded rooms that probably served civic-administrative functions, and a skull rack or *tzompantli* that surround a central open patio with an altar at its center. The civic-ceremonial complex is situated in a large monumental urban core containing many more mounds, possible residential structures, and other buildings that have not yet been excavated.

For reasons that remain unclear, Tula declined around the year 1150 A.D. Though Jorge Acosta, one of the premier early scholars in the region, was convinced that Aztec peoples conquered the region, there is only scant archaeological evidence for that assumption. Rather, the archaeology more strongly suggests that Aztec peoples burned, looted, and placed offerings in the Toltec city after it had already fallen. Aztec interventions at Tula have been the subject of some controversy, compounded by the fact that the Aztec era in Tula has been understudied. At present, it seems clear that Aztec II (or Fuego-phase, see Figure 3.1) ceramics are limited to the monumental precinct and sparse in almost all other regions of the city. In addition, a close reading of Acosta's published work (explored later in this chapter and in Chapter 5) indicates that Acosta may have overestimated the amount of early Aztec ceramics in his research. Instead, the predominant Aztec-era ceramics from my project and other projects are Aztec III and Aztec IV, indicating an intense reoccupation of the city sometime around or after 1350 A.D. (Aztec III is generally considered to start in 1350 A.D.; see Hodge et. al. 1993). This corresponds to a more general population boom in central Mexico (Smith 2008:78), but I argue in Chapter 5 that this population increase in Tula was probably also related to deliberate attempts by Aztec royalty to connect themselves with the ancient city.

Another series of important changes occurred in Tula immediately following the Spanish conquest of Central Mexico, which was complete by 1521. First, Franciscan friars and Indigenous masons constructed a small open chapel to the southeast of Tula Grande. At the same time, Hernán Cortés granted economic control of the region to Pedro Moctezuma, son of the Aztec emperor Moctezuma II. The younger Moctezuma's shrewd political maneuvers helped to ensure that the entire region would remain in his family's hands well into the colonial era—a situation that was extremely rare for an Indigenous subject (Chipman 2005).

In the late colonial and early postrevolutionary (after 1810) period, the Tula region (like many regions throughout Mexico) was dominated by *haciendas*, or plantations, that built upon some of the social structures inherited from the colonial era. (As an analogy, consider the relationships between antebellum plantations in the US South with later tenant farming economies in the same area.) In the Tula region, these were primarily plantations of maguey, a plant cultivated for several purposes, but especially for the production of *pulque*, an alcoholic beverage that has been popular in central Mexico since pre-Columbian times (Mastache, Cobean, and Healan 2002:33). Fifteen haciendas[7] occupied large portions of land, precipitating disputes with local villages over land and water rights (Mastache, Cobean, and Healan 2002:32).

The postrevolutionary period saw ever-increasing industrialization in the Tula region. Mexico's first railroad, an east-west line that connected Mexico City with Veracruz, was inaugurated in 1873 (Ortega Morel 2003:151-153). The next route, which ran north-south from the capital, included a stop in Tula; this helped initiate development of necessary infrastructure for Tula's future industries. The cement industry (which exploits the same building resources used in antiquity) has been one of Tula's principal economic strengths since the early twentieth century, including the Tolteca, Cruz Azul, and La Polar brands (Ortega Morel 2003:155-156). In 1972 the federal government established a major refinery for Petróleos Mexicanos (Pémex) in Tula. The Francisco Pérez Ríos thermoelectric plant, which helps to provide power for the Basin of Mexico, is also an important element of Tula's industrial core (Ortega Morel 2003:157).

3.4 HISTORY OF RESEARCH

[7] The fifteen haciendas were: Atotonilco, Dengú, El Salto de Agua, Jasso, La Cañada, La Goleta, San Antonio Tula, San Francisco Bojay, San José Bojay, San Lorenzo Endó, San Miguel Chingú, San Pedro Nextlalpan, and haciendas in Tepetitlán and Tlahuelipan (Mastache, Cobean, and Healan 2002:32).

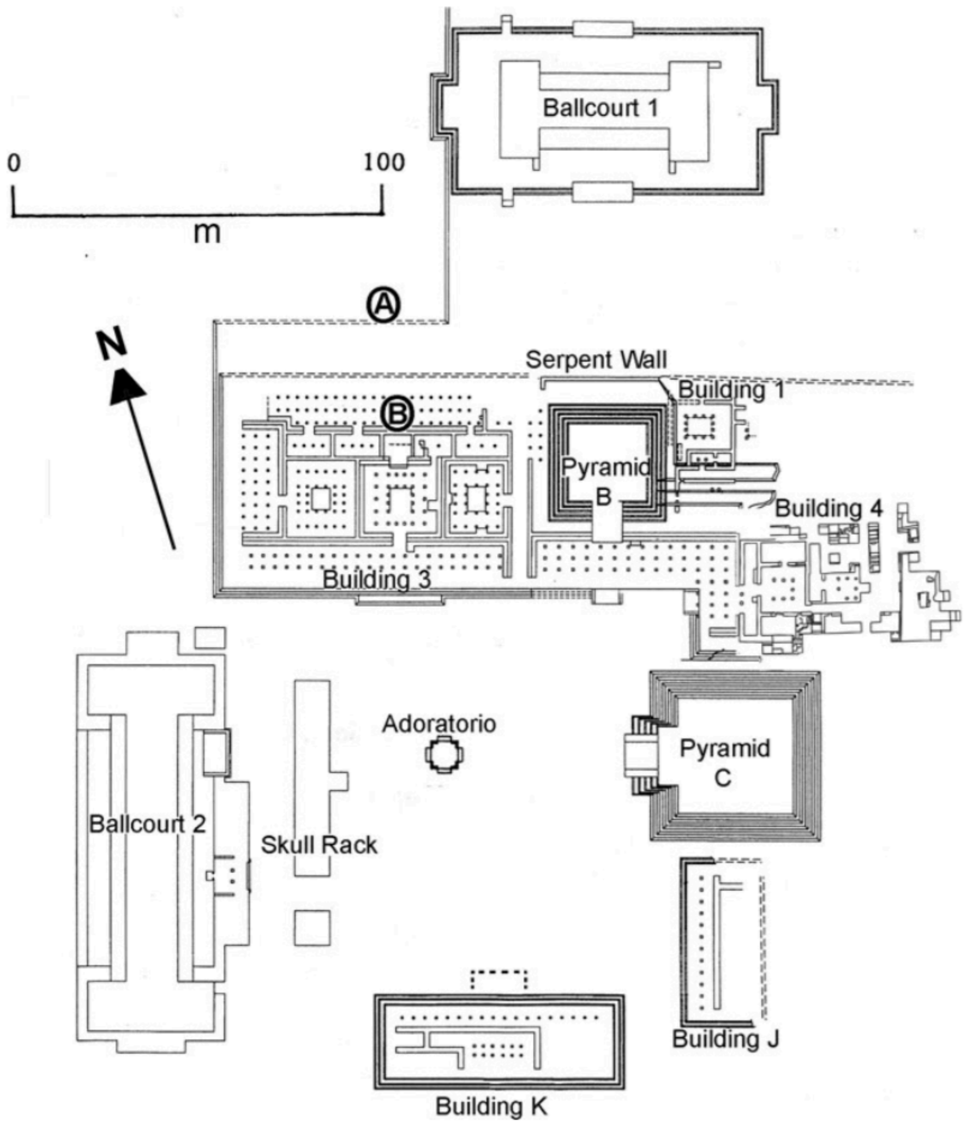

Figure 3.2: Tula Grande, the central ceremonial complex of the Tollan-phase city. The buildings detailed are based on the most current knowledge available about the central precinct. Aztec peoples constructed an altar on the northwest corner of Pyramid C. (Image in Healan 2012:61, Figure 6)

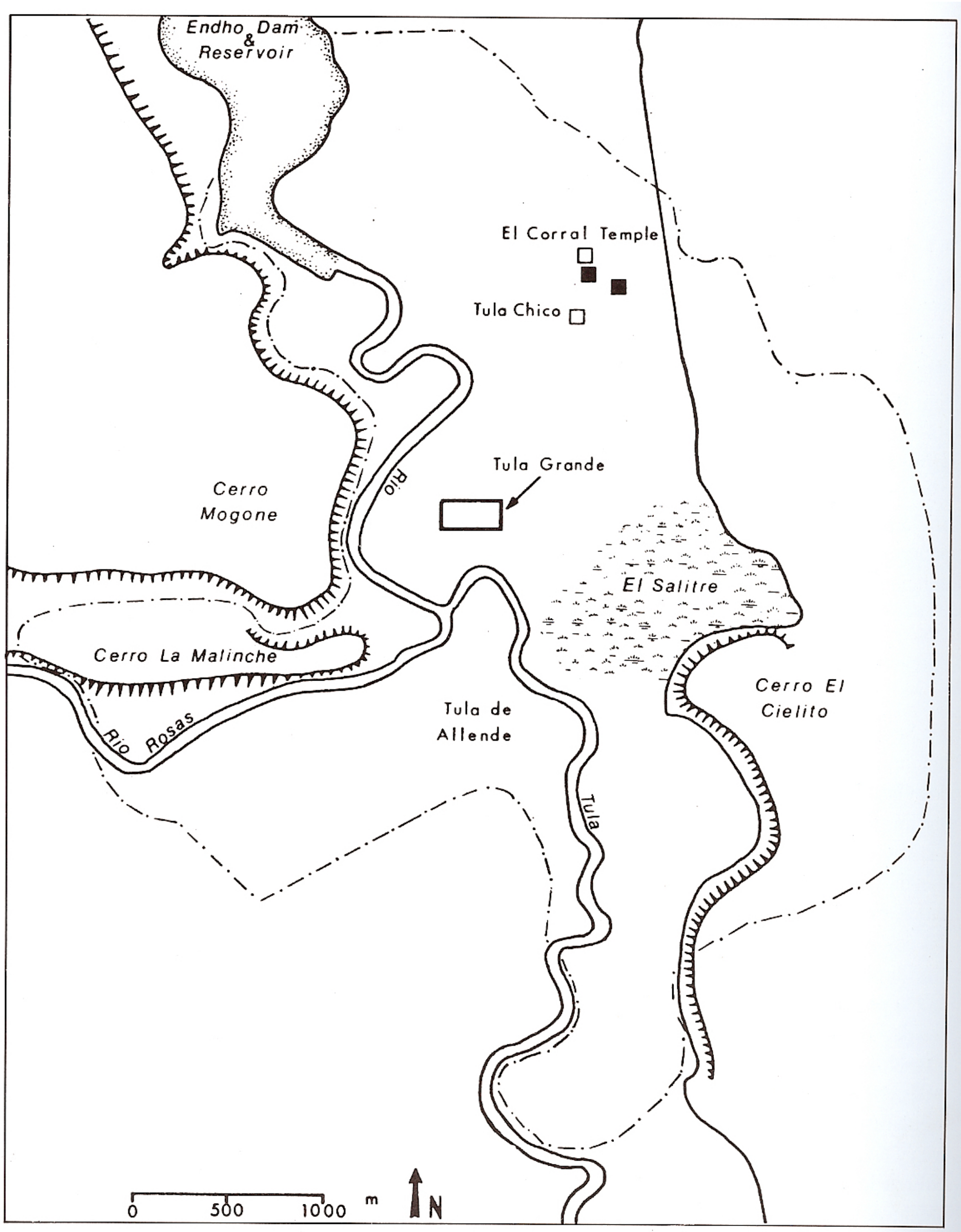

Figure 3.3: General map of significant places in Tula. (Image in Diehl 1983:59, Figure 11) The map shows many of the areas of excavation mentioned in this chapter. Cerro Magoni, one of the Epiclassic hilltop settlements, is just to the west of the confluence of the Rio Tula and Rio Rosas.

Early Explorations

The first excavators at Tula were arguably the Aztecs, who briefly settled in Tula Grande and executed various modifications to the ruined Tollan-era structures, many of which were destructive (Diehl 1983: 27, Healan 2012: 56, Acosta 1941-1961). At least some of the excavations were likely to have been performed with the goal of retrieving antiquities for later placement in Tenochtitlan (Diehl 1983:27). Emily Umberger, writing in the late 1980s (1987), stated there was little evidence from Tenochtitlan itself to support the idea that people from that city were looting Tula. More recent excavations at the Templo Mayor uncovered at least one example of a chac mool that appears to be a Toltec original (Healan 2012, López Austin and López Luján 2009b). I discuss this evidence in greater detail in Chapter 5.

The first scholar to describe Tula was A. Garcia Cubas (Garcia Cubas 1873, Healan 2012: 56). The Franco-American explorer Desiree Charnay later visited Tula in 1880 (Healan 2012: 56). He recorded detailed descriptions and drawings of the site in a very early book, *The Ancient Cities of the New World* (Charnay 1888). Like other explorer-archaeologists of his time, Charnay was chiefly an antiquarian, and collected artifacts for his personal collection. He also undertook unsystematic excavations at the central altar of Tula's ceremonial center (Diehl 1983:28, Charnay 1888), and excavated and recorded a residential compound known today as "Palacio Charnay" to the northeast of Tula's ceremonial center. Charnay was the first to recognize the similarities between Chichén Itzá and Tula, a topic that has been the subject of research in Mesoamerican archaeology ever since (Kowalski and Kristan-Graham 2007).

Jorge Acosta

Jorge Acosta began the first systematic excavations at Tula in 1940, marking the start of a decades-long archaeological project that resulted in the excavation and restoration of the majority of Tula's ceremonial center. Acosta's excavations revealed an extensive occupation that proved (on the basis of ceramics and later on the basis of several Carbon-14 dates) to fit chronologically between the florescence of Teotihuacan and Tenochtitlan, the Aztec capital. This simple chronological observation was one of the most important findings regarding Tula because it helped to explain the city's place within the regional history of Central Mexico. It also served to cement the idea that Tula was the original Tollan mentioned in the Aztec chronicles, a notion that has come into question in more recent scholarship (e.g. Gillespie 2007).

Acosta's project uncovered many of the iconic sculptures that Tula is presently known for: the small warrior statues (76 cm), bas-relief square pillars (around 4.75 meters), and tall Atlante warrior statues (4.6 m) that presently adorn the top of Pyramid B, sometimes called "Pyramid of the Moon" in Acosta's earlier writings (see Figure 3.2, 3.4). Acosta found most of these elements buried near the principal buildings in Tula's ceremonial center. When they were unearthed, several of the small warrior statues retained vestiges of their white, yellow, blue, red, and black paint (Acosta 1941:241). The manner of burial and the nature of the damage to some of these sculptures (including the removal of heads, feet, and hands) suggested, for Acosta, deliberate destruction (1941:241, see also Jiménez García 1998: 23). Notably, this manner of destruction also has echoes in Aztec sacrificial practices, which provides further evidence for the idea that late-Aztec activities (rather than Spanish colonial activities) produced alterations of the Toltec ceremonial center. Ceremonial beheading (which Acosta noted for the Toltec sculptures) was a common Aztec practice: Graulich [1988:401] notes that for telluric Mesoamerican gods, "beheading was the typical way of immolation." More broadly Umberger [1996] has a detailed discussion of the ways that monumental art—especially the beheaded and de-limbed figure on the Coyolxauhqui stone—was used in imperial Tenochtitlan to assert dominance and create ties with the past and with deities.

Acosta's excavations also revealed the impressive series of bas-relief stone tiles that today form part of the vestibules on the northern side of Pyramid B; the building was likely completely decorated with these during its final phases. Like the warriors, the bas-relief tiles were ritually destroyed during the pre-Colombian era. One series, the *coatlipantli* or serpent wall, represents human figures intertwined with large snakes. A second series adorning the northern façade of Pyramid B represents jaguars, wolves, vultures, and eagles devouring human hearts. These sculptures are important for understanding Toltec iconography, especially as it relates to war, artistic practice, and Aztec historical practice (Jiménez García 1998).

Figure 3.4: Examples of Tula's Atlantes (warrior sculptures). (Image in Acosta 1959:511, Photo 10).

Acosta's excavations also revealed the construction sequences and construction techniques utilized in elite Toltec architecture. Tall structures (such as pyramids and platforms) utilized rubble cores with retaining walls surrounding the fill (see illustrations in Acosta 1940-1965, see also Healan 1974:47). Interior fill alternated large-stone and small-stone nuclei until a sufficient mass was achieved (Acosta 1956-1957:76). My project revealed a platform structure built with an identical strategy in the courtyard of the Cathedral of San José (see Chapter 4). Both the larger rubble and the walls were comprised of medium-sized limestone and basalt stones that would have been readily sourced near the city. Floors and walls were sometimes covered with stucco (traditionally made with lime, sand, and water). These were often decorated in polychrome designs in bright colors, as was the case in the majority of ceremonial centers throughout Mesoamerica. Residences and other low buildings were constructed of adobe, stone, and wood (Acosta 1956-57:76, Diehl 1983:69-72, Healan 1974:47). My project discovered architectural elements that utilized similar materials and building methods in all of our excavation units (see Chapter 4).

Tula was also the site of a pioneering elite architectural style: it has several buildings that feature spacious columned rooms that would have sustained roofs in prehistory. Like the earlier Talud-tablero popularized during the Classic era, the colonnaded rooms would become popular in the Maya region (Chichén Itzá[8]) and in later eras (notably in the hall of the Eagle Warriors at Templo Mayor). The columns at Tula were created with a wooden core surrounded by small stones to create a square or circular shape, and finally covered in stucco (Acosta 1956:40). Rooms in one colonnaded building, the Palacio Quemado (Burned Palace), featured decorated benches against the interior walls. This building, and the similar buildings surrounding Tula's central plaza, likely served as elite meeting spaces for priests and rulers (Diehl 1983:65).

Acosta found that several buildings had been constructed in multiple phases, with later modifications completely encasing earlier constructions—Building B, for example, was built in at least three phases, two of which are visible in the present-day

[8] The relative dating of Chichén Itzá and Tula continues to be a subject of controversy; see Kowalski and Kristan-Graham 2007.

reconstruction (Acosta 1944:134, Cobean, Jiménez García, and Mastache 2012:67). This "encasing" strategy is typical throughout Mesoamerica in most epochs, and is most clearly represented at the Templo Mayor in the ceremonial precinct of Tenochtitlan. In my own excavations at the Cathedral of San José, initial evidence suggests at least some Aztec-era refinements to the existing Toltec structure, perhaps indicating a similar "encasing" strategy (see Chapter 4). Monumental Toltec architecture was likely part of a deliberate reference to the Teotihuacan past (see Umberger 1996:89). For example, Pyramid C contains five levels, as does the Pyramid of the Sun at Teotihuacan (Cobean, Jiménez García, and Mastache 2012:64); both share an orientation with staircases facing West, which was also the orientation of Spanish religious buildings (see Chapter 6).

In all, Acosta was responsible for the exploration, excavation, and restoration of Ballcourt 1, Pyramid B, Building 1, the Serpent Wall, Pyramid C, the Palacio Quemado, the Central Altar, and el Cielito, among other buildings. His foundational work has shaped archaeological research questions and practices at Tula ever since. His excavations uncovered the bulk of important Toltec art and sculpture that has been found to date, despite continuous research projects since his time. Because of his diligent dissemination habits, his detailed descriptions of excavations and Toltec structures have proved critical to later studies. His basic questions regarding site chronology, the meaning of the Toltec era, and the Toltec relationship with other sites such as Chichén Itzá and Tenochtitlan are still relevant today. Acosta was able to establish the first basic chronology of the site, though its details would be much refined by later researchers. His long exploration of Tula's ceremonial center produced the bulk of the knowledge about Tula's monumental core (Healan 2012: 103). Through excavation and restoration, his work served to "rationalize" Tula's ceremonial center, converting it from what must have been a rather confusing pile of debris into a coherent visual narrative that was specifically reconstructed for public enjoyment and public awareness (see Acosta 1956:40-43).

Acosta was quite careful in creating this coherence; his restorations generally did not go beyond what could be demonstrated archaeologically. However, some of his decisions—i.e. the decision to place the Atlantes and other carved stone sculptures at the top of Pyramid B—were based on similarities with Chichén Itzá rather than on ethnographic or archaeological evidence (Acosta 1945:30). Though Acosta was careful to note the various Aztec interventions to the site, few of these were taken into account during his reconstructions of the city center, particularly if they covered Toltec structures (see Acosta 1957:146-147). The coherent architectural narrative is thus largely a presentation of Tula as an exclusively Tollan-phase site in ruins, rather than what his extensive publications show: that Tula was a site venerated by the Aztecs through both constructive and destructive practices. The reconstruction of the Templo Mayor in Mexico City is an example of more modern conservation practices: restoration there does not hide the destructive impact of Spanish colonialism. At Templo Mayor, coherence is achieved through informative signage and scale models rather than through complete reconstruction of the temple itself. At Tula, Acosta's practice of restoring Toltec buildings to their Tollan-phase appearance by eliminating Aztec structures (e.g. Acosta 1960:42), rather than restoring or exposing later Aztec modifications, continues in modern excavations (Vázquez Cibrián 2013:10). This has had the effect of diminishing Tula's heritage as an Aztec-era site, a situation that this dissertation attempts to partly ameliorate.

Acosta's legacy has had an impact not only on the archaeology of Tula but also on the city itself. The infrastructure in place at the site—including the building complex where a significant amount of analysis takes place—is also part of this legacy. Many of the current archaeological laborers in Tula are the descendants of people who worked with Acosta (two members of my own team were born in the archaeological zone, daughters of the night watchman that Acosta hired to protect the site from looters). As a result of multigenerational employment in the industry that Acosta created in Tula, local workers are often knowledge experts regarding Tula's history, architecture, ceramics, and in particular, its artifacts. Many modern archaeological laborers supplement their income by creating faithful replications of iconic artworks from Tula and Mesoamerica more broadly. They are an important part of the modern transmission of knowledge and material culture pertaining to the site.

INAH and the University of Missouri Project

After Acosta's excavations ceased in 1955, the pace of excavation and reconstruction slowed. In the late 1960s Eduardo Matos Moctezuma completed the major site intervention of this time, the excavation and restoration of Ballcourt 2, which flanks the western side of the ceremonial center (Cobean, Jiménez García, and Mastache 2012:99, Healan 1974:19). This ballcourt is significant in that it is very similar to the ballcourt in Chichén Itzá in terms of its size, shape, and spatial relationship to other major civic-religious structures (Cobean, Jiménez García, and Mastache 2012:102).

The University of Missouri (UMC) archaeological project, directed by Richard Diehl, began in June 1970 (Healan 1974: 19). The UMC project complemented and collaborated with the ongoing efforts of Mexico's National Institute of Anthropology and History (INAH). The project's principal contribution was the excavation of residential structures, which provided a window into everyday life in Toltec-era Tollan that would have been impossible based on elite architecture alone. Several foundational studies arose from this project, including Dan Healan's dissertation on Toltec residential architecture (Healan 1974), Robert Cobean's dissertation on Tollan-phase ceramic complexes (Cobean 1990, see also Mastache, Cobean and Healan 2002:46-50), and Richard Diehl's book detailing everyday life in Tula (Diehl 1983). The UMC project, with its foundations in the thought of the New Archaeology (processualism), was a crucial part of systematizing knowledge about Tula's scope and chronology, as well as the activities of non-elites. The ongoing INAH project, which Guadalupe Mastache and Robert Cobean codirected for decades, also contributed substantially to knowledge regarding regional settlement patterns and site-wide architectural alignments (e.g. Mastache and Crespo 1974, 1982).

The UMC project concentrated on two goals: excavation and analysis of domestic architecture, and a systematic surface survey of Tula (Diehl 1983:37). The excavations concentrated on two residential groups: the Canal and Corral localities (Diehl 1983:69, Healan 1974:41-46). This represented the first detailed examination of residential architecture at Tula. Analysis showed that Toltec homes were built in complexes with up to five houses that surrounded a central open courtyard (Diehl 1983:69). The courtyards contained a square central altar that was faced on each side with layers of thin limestone, known as "Toltec small-stone" construction, with the top covered in plaster (Diehl 1983:72). (We found a similar construction in my project's excavations at the Open Chapel in Operation 5; see Chapter 4.) Healan (1974:57) notes that one altar was constructed using large potsherds that resembled Toltec small-stone. The altars often contained human remains, and one contained stone replicas of human skulls (Healan 1974:57).

Residential structures were built with limestone block foundations that supported walls constructed with adobe bricks (Diehl 1983:70, Healan 1974:49). Floors were usually constructed of leveled, compacted earth (known as *apisonados* in Spanish), though some floors were plastered with stucco. Notably, compacted-earth floors were still common in residences in Tula in the 1970s, providing a useful ethnographic comparison (Healan 1974:51). Some floors may have been constructed with prepared clay overlaying the more common sandy soil (ibid). In rare instances, flooring was constructed of adobe brick, but according to Healan (1974:51) surface bricks more often turned out to be fallen walls. Residential compounds were decorated with polychrome paint overlaying the stuccoed walls, and occasionally boasted carved stone decorations at the top of roofs (Healan 1974: 53-54). Wooden beams supported roofs and doorways, but these would have been increasingly difficult to procure as the city grew (Healan 1974:51), as researchers hypothesize that deforestation as the result of human activities accelerated the region's subsequent aridization (Mastache, Cobean, and Healan 2002:40).

The widespread use of adobe bricks throughout Tula explains the impression of Tula as a massive "adobe city." The use of adobe as a primary material for residential compounds (as opposed to the more durable stone construction in apartment complexes in Teotihuacan, for example) means that the modern landscape retains very modest evidence of Tula's original grandeur. Tula was "meant to impress, but not to last" (Corvarrubias 1957:273, cited in Healan 1974:62). Adobe construction techniques are thus one of several factors that make Tula archaeologically invisible, which in turn serves to cast its regional importance into doubt (Healan 2012:100). (I discuss these doubts at greater length in Chapter 5.)

Though part of UMC's central project was to examine everyday life in Tula through the analysis of residential (rather than elite civic-ceremonial) architecture, it should be emphasized that most of the residential compounds so far excavated are centrally located and contain goods such as plumbate and high-quality polychrome vessels imported from distant regions, and are thus considered to be high-status (Healan 2012:70). Healan (2011:70) has emphasized that these residential complexes are probably not representative of lower-status individuals, who were likely to have lived in Tula's hinterland.

INAH has operated the site since Acosta's excavations began in 1940. Foreign projects (including the UMC excavations and my own dissertation work) run alongside or in partnership with this larger project. Its ongoing activities both within the delimited Archaeological Zone of Tula and in salvage projects throughout the city have produced a wealth of information regarding the city, as well as exciting new finds. Among the most important discoveries has been the exploration of Building K (see Figure 3.2), which featured a late Aztec-era residence with some evidence of continued colonial occupation (Figueroa Silva 1994). Carol Vázquez (2013) excavated and restored Tula's Open Chapel in

2010, determining its architectural sequence and discovering a large colonial burial population. In the late 1990s, the project excavated a rare ceramic workshop in the city, including an updraft kiln (Hernández et. al. 1999). In addition, the project has uncovered multiple spectacular specimens of Tollan-phase sculpture in construction sites throughout urban Tula (Healan 2012:102).

3.5 ACOSTA'S AZTEC EVIDENCE

It is important in the context of this dissertation to outline with considerable detail Acosta's evidence of Aztec occupation of Tula, for several reasons. First, Acosta's findings remain among the few bodies of published research with significant discussion of the Aztec occupation at Tula. This occupation is particularly important because it constitutes the bulk of the evidence surrounding Aztec uses of Toltec religious buildings. Second, this information is necessarily tied to my own findings and those of my colleague Carol Vázquez Cibrián (2013) at the Open Chapel. Finally, though some of this information is available in English-language sources (e.g. Diehl 1989), it may prove useful to future researchers to compile Acosta's Aztec-era information into one short essay.

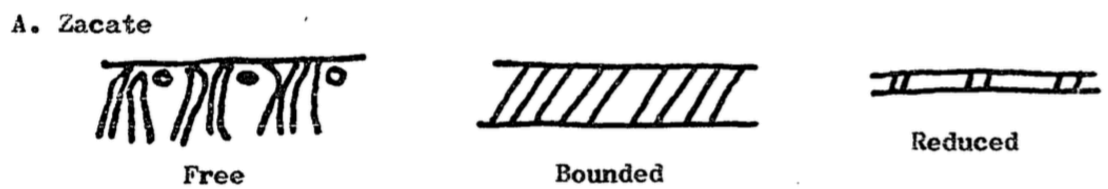

Figure 3.5: Examples of *zacate* motifs found on Aztec Black-on-Orange vessels, showing progression over time (Parsons 1966:483, Figure 10.A). Later refinements have shown that the free and bounded styles may be present simultaneously (e.g. Minc et. al. 1994), but free zacates are rare or non-existent in Late Aztec (III and IV) motifs.

Before presenting this information, it is necessary to briefly explain Aztec ceramic typologies, which form the basis for Acosta's interpretations as well as those of many other researchers in the Basin of Mexico. Aztec I-IV types are part of the Aztec Black-on-Orange ceramic tradition. They represent just one of several types of Aztec-tradition ceramics that include Black-and-White-on-Red and other redwares. Black-on-Orange wares, because of their distinctive decoration, are more chronologically diagnostic than the other Aztez types. Some Aztec wares are not chronologically diagnostic at all (Parsons 1966:181).

Acosta was using the best information about Aztec ceramics available in his time, but because this typology was subject to many subsequent refinements (especially Parsons 1966), many of his identifications would be inaccurate by today's standards. Importantly, Acosta often used the term "Aztec II," or Tenayuca (Acosta 1945:47, Fig. 29), to describe sherds that were quite possibly from later eras. Parsons was not able to establish a firm chronology for Aztec Black-and-White-on-Red and Black- on-Red types (see Parsons 1966:307); Leah Minc (1994) refined chronologies for these types but there are still many sherds that fall outside the range of her temporally diagnostic typology. Additionally, some of the Aztec Black-on-Orange types that Acosta identified as "Aztec II" (see illustrations in Acosta 1945, Fig. 32) may also be misclassified according to later refinements in the Aztec classification system, particularly that of Jeffrey Parsons (1966). The differences between Aztec II and Aztec III motifs include subtle stylistic shifts. For example, the grass-like open *zacate* element of Aztec II ceramics (Figure 3.5) is enclosed with lines and finally reduced in Aztec III motifs.

Another possible reason for the preponderance of Aztec II materials in Acosta's excavations was his firm belief that early Aztec settlers invaded and destroyed the Toltec state sometime around 1150 A.D. (Acosta 1940:187, Acosta 1944-44:155, Acosta 1956:75). This assumption was perfectly logical based on readings of the Aztec chronicles and on the archaeology, which showed Aztec II pottery in levels above Toltec pottery (ibid). However, Acosta was well aware that the fall of Tula was dated to around 1150 A.D., while Aztec II pottery was accepted in his time to begin around 1224 A.D (Acosta 1944:154). Acosta therefore proposed that the dates for Aztec II be shifted to an earlier beginning. Additionally, Acosta emphasized Aztec II materials in his writing even though his own publications show that many of the offerings and Aztec-era constructions that Acosta himself described were built well after the fall of the city in the late Aztec (III and IV, or Tesoro and Palacio) era.

However, later scholars suggest that Tula had in fact fallen well before the first Aztec settlers arrived at Tula Grande, and new scholarship has suggested Aztec that Aztec II ceramic dates should probably be *later*, rather than earlier as Acosta had proposed (Healan 2012:96-97). Because the two civilizations probably did not overlap, the motives for Aztec interventions in Tula could not have been related to conquest. I explore alternative motives for Aztec interventions in Chapter 5.

As suggested above, Acosta encountered what he described as Aztec II pottery throughout Tula Grande. Nevertheless, his 1940s tables for excavation units (Acosta 1940:182-187) show a much higher quantity of Aztec III ceramics than Aztec II ceramics. A description of a later stratigraphic pit, Pozo 1 (Acosta 1944: 149) mentions evidence of Aztec III and colonial-era pottery. Acosta was also fascinated by a single sherd of Aztec I pottery that, to him, represented a combination of Aztec and Toltec motifs (Acosta 1944:153). Aztec I sherds have proved to be as rare in later excavations in Tula as they were in Acosta's time.

In the second season of excavations, Acosta's team conducted studies at a fifteen-room residence in an area known as El Cielito (Figure 3.3). Acosta reported that this structure contained a majority of Aztec IV ceramics from its surface to a meter below the surface, followed by Toltec-era ceramics (Acosta 1941:245). It has often been postulated that this structure was the residence of the Moctezuma family (e.g. Diehl 1983:168), though because it has since been largely destroyed this is a guess that will be difficult to substantiate archaeologically.

Acosta's team later explored a small mound known as Building 2, which lay at the bend of the old access road that led to the Archaeological Zone and around 50 meters from the Palacio Charnay (Acosta 1944:148-149; Acosta provided no maps, but my very speculative guess prior to ground truthing is that the building is probably located around the letter A in Figure 3.6). This seventeen-room structure contained Aztec III and IV (late

Aztec) ceramics on top of the floors, while the team found Mazapa ceramics below[9]. According to Acosta, the final phase of this building also featured colonial-era construction techniques, such as a doorway that would have supported a wooden door that swiveled on a post (ibid).

Also outside of Tula Grande (and also, unfortunately, without a location in a published map), Acosta's team explored a building that they called Edificio B. It was located somewhere "to the southeast" of the ceremonial center. My own excavations at the Open Chapel were to the southeast of the site center, though whether Edificio B is in this zone is impossible to know at present. Acosta describes the building as rectangular, with elongated stones that were uncommon in Toltec constructions. The back part of the building had a refuse pit containing Aztec III and IV ceramics, along with a few pieces of colonial-era glazed mortars and red or black-slipped *pebeteros*, or incense burners (Acosta 1957:142).

Despite Acosta's search for Tula's "invaders," he did not find evidence of early Aztec (Aztec II) ceramics in El Cielito, Building 2, or Edificio B. Instead, the majority of ceramics were late Aztec.

[9] Wavy-lined red-on-brown Mazapan ceramics, which Acosta considered to be the diagnostic Toltec type, have been a source of deep confusion ever since his time. Robert Cobean (1990) determined that this type is far less common than Acosta believed, and peaked in popularity before the Tollan-phase apogee. The most important diagnostic Tollan-phase type is the Jara (brushed orange) type. Other important Tollan-complex types include Soltura and Blanco Levantado ollas, Toza, Rebato, Macano, and Sillón Incised bowls. A good overview of the Tollan-phase types is provided in Mastache, Cobean, and Healan 2002:46-50.

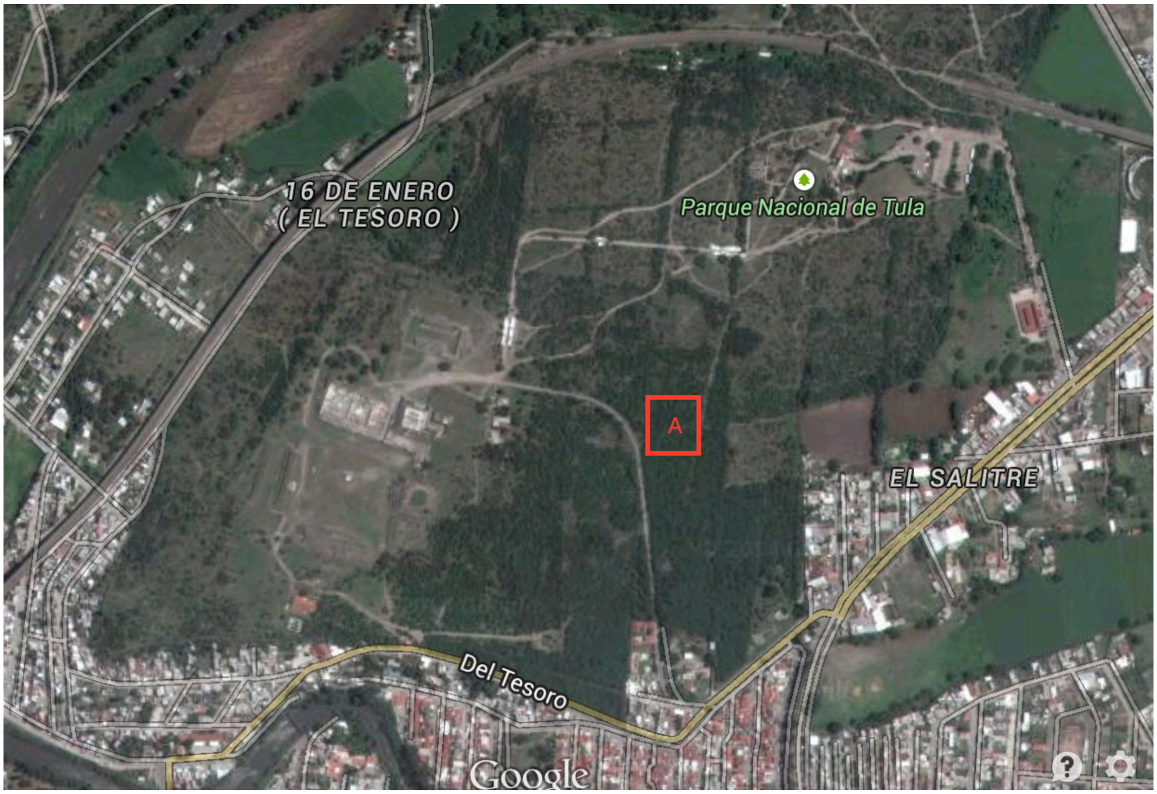

Figure 3.6, Showing the hypothetical location of the building (A) that Acosta called Building 2. Adapted by the author from DigitalGlobe (2015); Google/INEGI 2015.

In Tula Grande, Pyramid B (see Figure 3.2) suffered severe pre-Columbian destruction and burning. The last phase of the building, which was probably stunningly decorated in bas-relief tiles, had been almost completely dismantled in the pre-Colombian period, with the exception of the Northern façade (Cobean, Jiménez García, and Mastache 2012:67; Acosta 1944:128-130). Its *coatilpantli* (serpent wall), pillars, and tall warrior statues (*atlantes*) had been ritually destroyed and, in some cases, buried in the pre-Colombian era by Aztec peoples. In the fill of the vestibule to the south of Pyramid B, Acosta encountered a human burial (about 1.38 meters above the floor of the vestibule) that he described as Aztec II (Acosta 1945:43-45), though its associated pottery was a Plain Orange ware that is not temporally diagnostic within the Aztec era (Acosta 1945:44). Under the fill in front of the steps of Pyramid B and directly over the stucco floor of the vestibule, in an area comprising about six square meters, Acosta found a vast quantity of pottery that he identified as Aztec II. This pottery filled “48 cloth bags” (Acosta 1945:46).

During his third season at Tula, Acosta also began the exploration and consolidation of the central altar (see Figure 3.2), a structure that Desiree Charnay mostly destroyed sixty years earlier. His team found various vessels (which they interpreted to be Aztec II) on the eastern side of the structure that were placed there after the destruction of the altar (Acosta 1945:48). During later seasons, he encountered more spectacular Aztec finds. In a small cavity within the bedrock, he found an Aztec-era offering consisting of 33 ceramic objects, most of them vessels, but also including three ceramic figurines (Acosta 1956). It is worth mentioning that some of the Black-on-Orange vessels depicted from this offering do conform to later definitions of Aztec II decoration (Parsons 1966); they have a distinctive zacate-with-loop element and complex geometric designs that are typical of Aztec II motifs (Acosta 1956:52, Fig. 6; see Figure 3.7 in this chapter). However, several of the vessels had forms (bowls with incurved rims) that retained Aztec II decorative elements into the Aztec III period (Parsons 1966:302). Several of the Black-and-White-on-Red vessels depicted in these offerings are either nondiagnostic or slightly later than Acosta believed (see Parsons 1966:238, Minc 1994), though he also described these as Aztec II (Figure 3.8). For example, Object 4 in Figure 3.8 corresponds with Leah Minc’s (1994) Black-and-White-on-Red Bowl Variant D, Subvariant D2, which is classified as II-III transitional. Object 6 in Figure 3.8 is possibly a variation of Minc’s (1994:517) Black-and-White-on-Red Bowl Variant G, which she defines as Aztec III, but this is inconclusive—the bowl may simply be non-diagnostic.

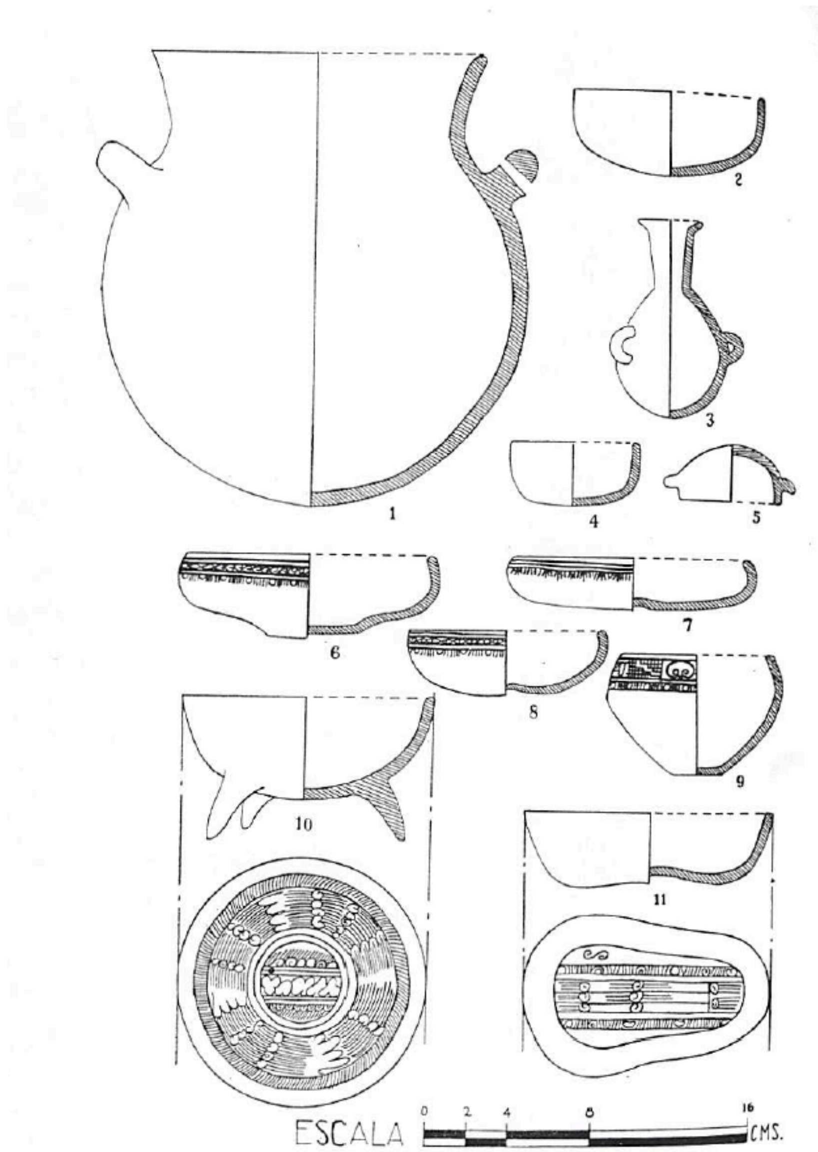

Figure 3.7: Vessels used as offerings in the Central Altar of Tula Grande (Acosta 1956:52 Figure 6). Acosta identified the decoration of the vessels as Aztec II, which is correct according to modern classification schemes (Parsons 1966).

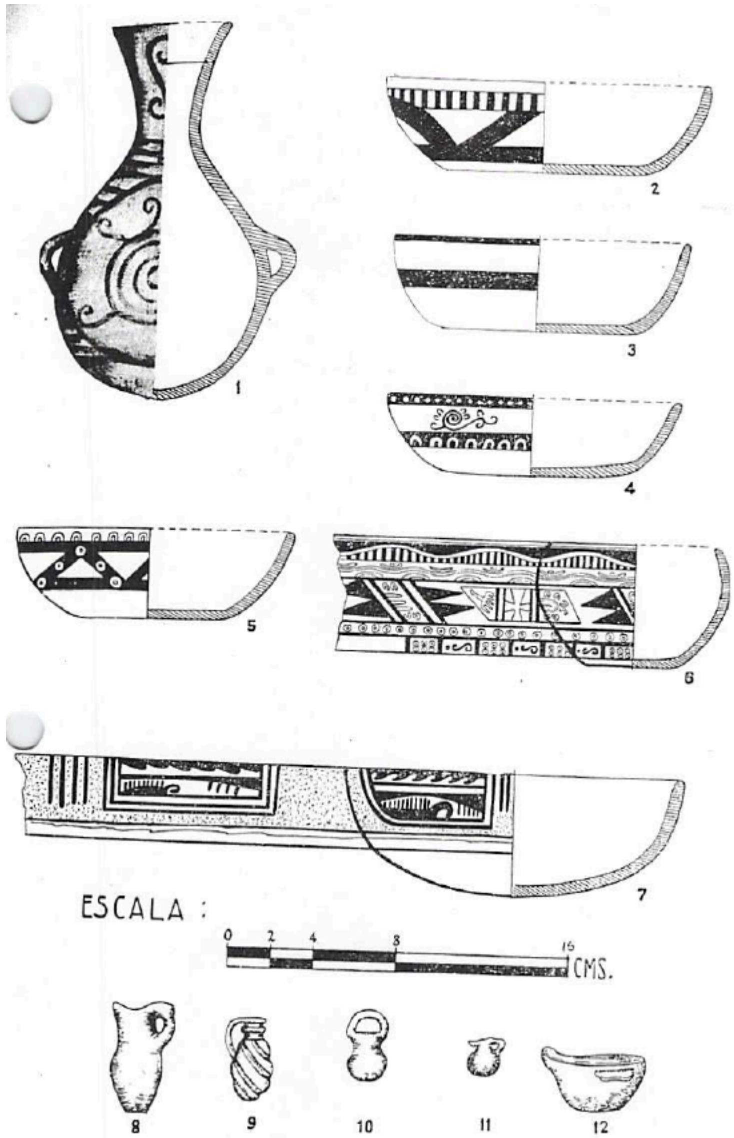

Figure 3.8: Offerings from the Central Altar in Tula. Objects 1-6 are Black-and-White-on-Red bowls that Acosta identified as Aztec II, but several of these are either nondiagnostic or slightly later than Acosta believed. (Acosta 1956:53 Figure 7; cf. Parsons 1966:238, Minc 1994)

While looking for Tula's "cemetery,"[10] Acosta's team also excavated ten burials in an area to the southeast of Tula Grande known as El Salitre (see Figure 3.3). The majority of

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[10] The Toltecs, like other Mesoamericans, did not generally bury the dead in a single centralized location; the UMC project discovered human remains in the altars of house complexes. (Healan 2012:68). The nearby, earlier (Coyotlatelco-phase) site of La Mesa has both rectangular and circular buildings, and burials were found below both types, though researchers noted that

the burials that he encountered there were associated with Aztec ceramic offerings (Acosta 1945:49-51), all but one of which he identified as Aztec II. However, several of the vessels are incurved bowls, which may have retained Aztec II motifs into the the Aztec III period. One has a reduced zacate element and dashes typical of Aztec III motifs (Figure 3.9; see also Hodge et. al. 2003:131). Another is a non-diagnostic example of Red Ware. I also discuss the evidence at greater length in Chapter 6.

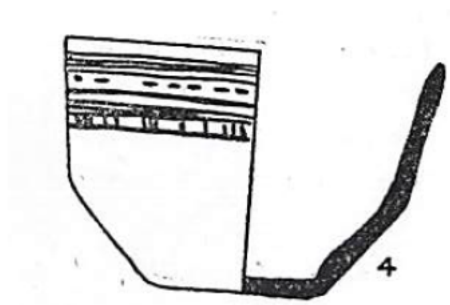

Figure 3.9: An Aztec vessel associated with a human burial that Acosta identified as Aztec II (Acosta 1945:50, Figure 32). The vessel, in fact, has decorative reduced *zacate* and dashes that are typical of Aztec III vessels (Parsons 1966, Hodge et. al. 1993).

circular structures usually contained more burials. One circular structure in particular contained over 30 burials (Mastache, Cobean, and Healan 2012:65, 67 Figure 4.10).

Figure 3.10: Selections of Aztec artifacts from Acosta's excavations. Top left: Aztec brazier with a "weeping Tlaloc" motif from Pyramid C (Acosta 1956:110 Lam.52); Top right, ceramics and jade and alabaster necklaces from Pyramid C (Acosta 1956:87, Lam. 34 and 35); Bottom right, brazier and *cuahxicalli* (sacrificial human heart receptacle) from the Palacio Quemado (Acosta 1956:76, Lam.25 and 26), Lower left, Aztec altar and brazier from Pyramid C (Acosta 1956:109, Lam.50 and 51); Center, *maqueta* from Palacio Quemado (Acosta 1956:73, Lam. 24).

In Pyramid C (see Figure 3.2) close to the southern sloped surface near the staircase, Acosta found an offering that had been deposited after the destruction of the staircase: a large chert knife (25 cm long by 9 cm wide), along with a jade pendant and bead. Nearby, he found two vessels that were likely of Aztec origin, along with a small sculpture depicting a human face emerging from the body of a serpent. Acosta also attributed this piece to the Aztecs (Acosta 1946-1950:49). On the northern side of the staircase, Acosta found three additional Aztec offerings. Offering 1 consisted of three plain orange bowls stacked on top of one another. From the drawings Acosta provided (Acosta 1956:85), at least one of these bowls appears to be the "pumpkin" form with undulating walls. Offering 2 consisted of brazier fragments painted with lime (*cal*), alongside a brown chert knife. Acosta interpreted the knife as a sacrificial knife, and identified the brazier as Aztec III. Offering 3 rested between the first and second levels of the pyramid. It contained two vessels that held necklaces made of jade, alabaster, and shells. One vessel had an annular base, which Acosta interpreted as a pulque-drinking vessel. The other was another vessel with a "pumpkin" form (*cucurbitácea*), covered with brazier fragments, and filled with 303 jade beads, two figurines, and two discs. Acosta identified all three offerings as pertaining to the Aztec III period, and determined that they had all been deposited well after the destruction of the building (Acosta 1956:84-86). On the building's northern side, near the surface of the plaza, Acosta found another offering of a 30 cm.-long chert knife and four jade beads (Acosta 1957:145).

In addition to offerings, Acosta also found evidence of Aztec-era destruction of Pyramid C. He found stone supports and several Chac-mool sculptures from the Toltec era that had apparently originally rested at the top of the pyramid, but had been destroyed and thrown off of the building in antiquity, presumably during the Aztec II era. One of the sculptures was missing its head, and the other consisted only of a torso (Acosta 1946-1950:84).

Another major Aztec find near Pyramid C was the small altar that still rests to the northwest of the building. Acosta determined that this structure was built after Pyramid C's decorative facing had been dismantled. This is based on the way that the structure overlaps the northwestern corner of Pyramid B's sloped wall. The altar is approximately 1.08 meters high and likely had a staircase to the west (giving access from the central patio). Surrounding the altar, Acosta's team found great quantities of intentionally broken Aztec vessels, the majority of which were large braziers (Acosta 1956:107-112). The braziers were globular, with annular bases; they were elaborately decorated in polychrome. One featured a paper-fan motif. Many featured a human face modelled in clay with Tlaloc attributes, while others had Tlazoteotl attributes[11] (ibid). Among the broken vessels, Acosta also found perforated incense burners, pulque cups, censers, plates, and mortars. The altar was also associated with a stone head that probably belonged to a Chac-Mool figure. Acosta identified some of the vessels as Aztec III.

Acosta interpreted the vast amount of intentionally broken pottery to be evidence of an Aztec New Fire ceremony, noting that the pieces were broken and then dispersed up to ten meters away. The new find also showed that some of the braziers from the Aztec altar were associated with the broken brazier pieces from Offerings 2 and 3, found on Pyramid C (Acosta 1956:114).

Acosta assumed that the Palacio Quemado, or "Burned Palace" (also known as Building 3; see Figure 3.2), had been burned in antiquity by Aztec invaders (Acosta 1956:67). However, archaeologists have recently raised the possibility that early Aztec peoples burned the building and placed ceramics there after the city's collapse (circa 1150 A.D.), a hypothesis that requires further investigation (Healan 2012:96-97). In addition to its destruction, the building also contained new Aztec-era constructions. On the southeast corner of the "grand room," Acosta encountered a "recent construction" that contained a refuse pit containing Aztec III and IV ceramics, with a minority of Aztec II pieces. The construction turned out to be an inclined (*talud*) foundation that rose 1.1 m above the floor of the principal hall (Acosta 1956:95). Among the finds within this context was a *maqueta* (a small-scale model made of clay) of an Aztec temple (Figure 3.10). The pit also contained

[11] Tlaloc is the rain god, and is one of the two patron deities of Tenochtitlan. Tlazoteotl is the goddess of midwives, as well as purification and filth.

a large brazier decorated with skulls as well as a *cuauhxicalli*—a receptacle for sacrificial human hearts (Figure 3.10; Acosta 1956:72-74).

In the southern part of Hall 2 of the Palacio Quemado, Acosta found a long east-west wall built on top of the floor of the Toltec building (Acosta 153-154:129). His team later determined that the structure was a low platform about 1.6 meters tall; above it, he found vestiges of floors and wall foundations. According to his publications, the structure occupied about half of Hall 2, covering the entire southeastern portion of the room (Acosta 1957:146; see Acosta 153-54:168 for a map showing the extent of the structure). Acosta completely dismantled this structure in order to expose the floor of the Toltec hall (Acosta 1960:42). During this portion of reconstruction, the team found two square offering boxes topped with stone slabs (at least one of which had been quarried from a dismantled Toltec building). One box had been looted, but the other contained four chert spearheads that had been carefully placed there during the Aztec period (Acosta 1957:147). The Aztec structure in Hall 2 of the Palacio Quemado had completely covered a Toltec-era altar with a perfectly-preserved Chac-mool figure on its Eastern side, as well as a Toltec-era *tlecuil*, a square pit used for fire, of which there are several in the Palacio (Acosta 1957:147, 166). Because the Aztec structure had been built with the rubble from the Toltec building as its nucleus, it was clear that the Aztec-era building was constructed long after Palacio Quemado was burned. Acosta was sure that the same rubble had completely covered the Toltec altar and Chac-mool sculpture (ibid).

Acosta clearly expressed his confusion that the same culture that he believed had invaded and sacked the Toltec capital (Aztec II peoples) would have also left so many offerings of precious objects there (Acosta 1956:92-93). Though the pattern struck him as strange, by his ninth season in Tula he recognized it as ubiquitous (Acosta 1957:145). He posited that the Chac-mools, almost all of which were found decapitated, had been destroyed by the Aztecs because they pertained to a different religion, just as had been the case with the Spanish religious conquest in Mexico (Acosta 153-54:169). Only Chac-mools that were “hidden” by rubble were found completely intact.

The answer to this problem is most likely that the early Aztec (Aztec II) population in Tula was even more ephemeral than Acosta thought. Further, the early Aztec occupation at Tula, which is associated with burning some buildings, may have occurred after Tula’s collapse. The short review of Acosta’s evidence also shows evidence a far greater quantity of late-Aztec ceramics in Tula’s ceremonial center than is popularly believed. If that is the case, other explanations are needed for the ephemeral early Aztec occupation and the much more extensive late-Aztec occupations at Tula. I discuss other possible explanations for these Aztec activities in Chapter 5.

3.6 CONCLUSIONS

Tula has had a long history of research that has primarily emphasized its status as the capital of the Toltec civilization. However, Aztec peoples also settled in Tula, coopting and commemorating its history with offerings, rituals, new constructions, and destructive practices (also consult Chapter 5). Jorge Acosta removed most of the evidence of that occupation, but his publications reveal that Aztec peoples creatively intervened in every structure in Tula Grande. Researchers have typically characterized the Aztec interventions as negative (e.g. Diehl 1983:159-60; see also Umberger 1987:72).

However, Acosta’s publications make it clear that Aztec interventions at Tula were far more creative and commemorative than the present body of secondary literature would have it. In this chapter I have argued that Aztec interventions that may be viewed as destructive, such as the beheading of monumental sculptures, has echoes in Aztec ritual practice. I have also gathered significant evidence from Acosta’s excavations that show late Aztec commemorative offerings in many of Tula Grande’s main buildings.

Further, the idea that Aztec peoples (specifically Aztec II ceramic users) precipitated Tula’s collapse is increasingly doubtful (Healan 2012). In this chapter I have presented evidence showing that much of the Aztec material from Tula Grande is late Aztec, according to Acosta himself. Further, much of the material that Acosta characterized as Aztec II may in fact be later or non-diagnostic according to later classification schemes (e.g. Minc 1994, Parsons 1966). Acosta likely overemphasized the quantity of early Aztec materials due to his conviction that Aztec people had invaded Tula and caused its collapse and lack of access to definitive regional ceramic typologies. Combined, this evidence seems to point to an ephemeral early Aztec (Aztec II) occupation that likely occurred *after* Tula's collapse. Much of Acosta's material (including material inside Tula Grande), my own material (see Chapter 4), and that of other investigators (e.g., Mastache and Crespo 1974) consists of Late Aztec (Aztec III and IV) ceramics. In Chapter 5 I argue that this combined evidence indicates an Aztec strategy of appropriation and association with the ancient city, rather than an occupation that invaded and looted Tula. Finally, Aztec interventions at Tula normally took advantage of Tula's building materials and existing Toltec structures. In the following chapter, I present evidence from my own excavations that show that Aztec-era peoples used similar strategies in their interventions near Tula's Open Chapel and Cathedral of San José.

CHAPTER 4: PRELIMINARY FINDINGS

4.1 INTRODUCTION

This chapter will present preliminary data derived from my 2013 excavations at Tula's Open Chapel and Cathedral. The data will serve to highlight the complex relationships between Tollan-phase, Aztec-era, and colonial-era occupations at Tula, which are often nested (see also Healan 2012:97-98). Acosta's excavations at Tula Grande (see Chapter 3) provide a context for those activities in Tula's monumental core, while my excavations provide contextualized data outside of that center.

What should be clear from the data below (and Jorge Acosta's excavations, see Chapter 3) is that people in Aztec-era Tula did not reoccupy Tula by razing Toltec buildings and replacing them with new constructions (see also Healan 2012). Instead, they lived inside of the buildings of their predecessors, modifying them but not destroying them. The late-Aztec occupation was especially dense at the Open Chapel location. Based on the data from both sites, Jorge Acosta's excavations, and other excavations at Tula (e.g. Figueroa Silva 1994), I will argue in this chapter that Tula should be understood as an Aztec-era site, in addition to its current status as a Tollan-phase site. It should also be clear that during the subsequent occupational transition—that is, from the Aztec era to the colonial era—there is a remarkable continuity in material culture. The reader will note the ways that I sometimes struggled to determine whether a given context was Aztec-era or colonial. In the subsequent chapters I explore the implications of that finding.

Given that the goal of my project was to understand the Aztec and colonial occupations (see Chapter 1), I did not significantly excavate any of the Toltec-era contexts that I discovered. I terminated our excavations when I was reasonably sure (usually through small excavations into floors or fill contexts) that we had reached a Tollan-phase occupational level. Because I am not an expert on the Tollan phase, and also that I had limited time and resources, I deliberately left Tollan-phase architectural elements intact. I hope that future researchers will return to the areas that I excavated and elaborate on my findings. However, this early occupation (as I show below) was important to the scope of my project insofar as it influenced Aztec modifications, which in turn impacted the placement of the Spanish colonial buildings.

As noted in Chapter 1, we excavated according to natural and cultural stratigraphy, with each strata labeled with a unique number. When it was obvious that a strata had been cut, the cut and its fill each received a number: in the ceramic tables below, the fill context number and the cut number are combined (e.g. 15/16). Further, if a given natural or cultural layer continued for more than 10 cm, we stopped excavations and gave it another context number. We did this so that we could partially correct for any possible errors that might have resulted from failing to note a soil change. The various relationships are represented in the Harris Matrices below, with the contexts shown in reverse depositional order (most recent contexts at the top of the charts). I believe that these represent the often complex stratigraphy in a more simplified form than do our wall profiles. The reader should also note that some of our units were irregularly shaped on one side because they directly abutted the outflaring walls of the Open Chapel. Finally, we measured depth by using a datum at the highest corner of each excavation unit, which was always set at 5 cm above the surface.

The following maps illustrate the locations of the excavation units at the Open Chapel (Figure 4.1) and the Cathedral (Figure 4.2), respectively.

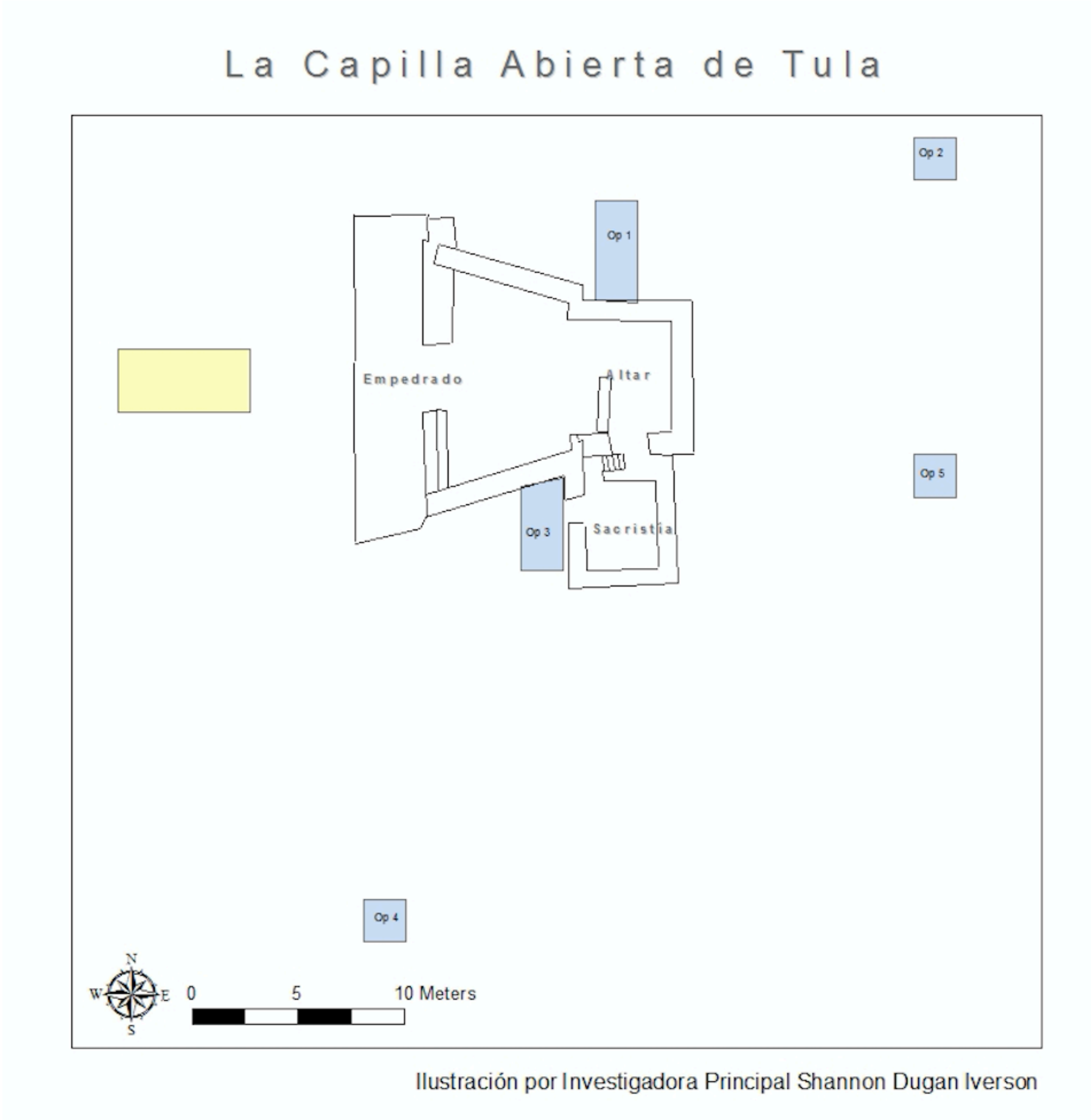

Figure 4.1: Operations excavated at the Open Chapel during Iverson's project, in blue. Human internments were encountered during Carol Vázquez Cibrián's excavations (2013) in the yellow-colored area. Operation 1 is adjacent to the north side of the Chapel; Operation 3 is adjacent to the south. Operation 2 is on a ridge to the northeast of the Chapel; Operation 5 is directly south of Operation 2. Operation 4 is the southernmost unit.

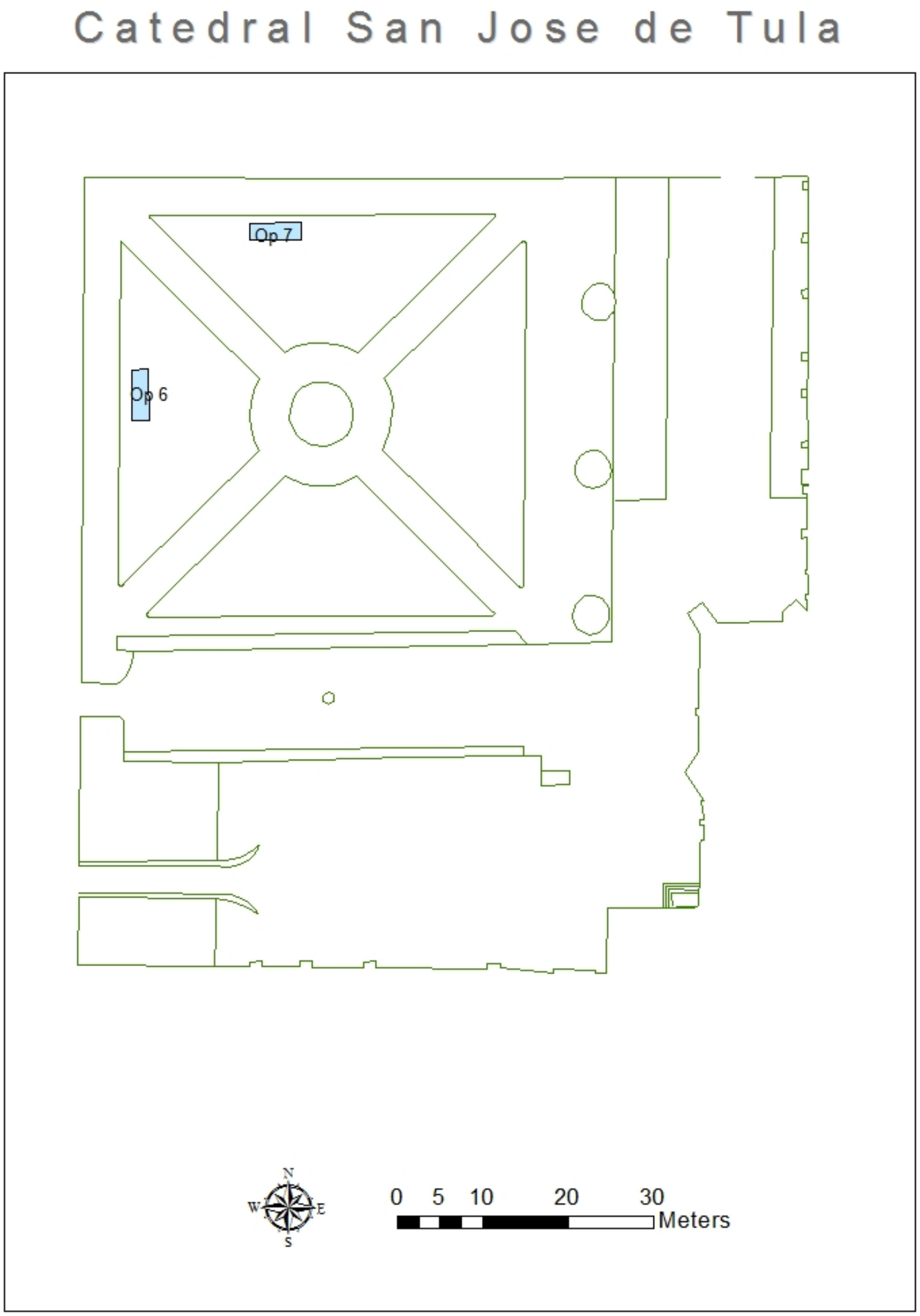

Figure 4.2: Atrium of the Cathedral of San José. Operations excavated at the Cathedral of San José during Iverson's project are in blue.

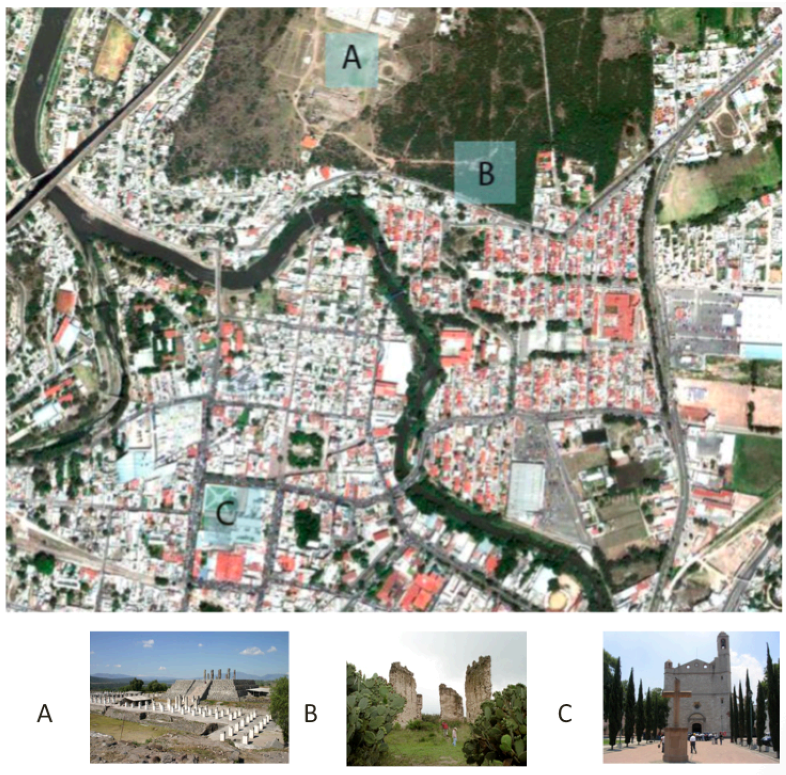

Figure 4.3 Google Earth satellite imagery of Tula, Hidalgo showing the relative locations of (a) Tula's ceremonial center, (b) Tula's open chapel, and (c) Tula's cathedral. (Map data adapted by the author from DigitalGlobe, Google 2015).

4.2 OPEN CHAPEL

Operation 1

Operation 1 is a long unit that abuts the northern wall of the Open Chapel. It was designed in part to provide a window into the construction of the Open Chapel's walls and to understand the Open Chapel's relationships to the surrounding plaza and pre-Columbian building phases. The unit was 2 meters on its southern side, 4.18 m on its eastern side, 4.7 m on its western side, and 2 meters on its northern side. Its stratigraphy is represented in the Harris Matrix shown in Figure 4.6.

Excavations first revealed a layer of gravel that appeared to be the preparatory foundation for a stuccoed floor, which was highly eroded and visible only in small pieces (Context 3). Context 3 was likely roughly coeval with the Open Chapel, judging by the artifact assemblage below it (see low, but existing, quantities of colonial ceramics in Contexts 12 and 17 in Table 4.6). The partially stuccoed gravel layer was interrupted by several intrusions. This included Context 13/14, which contained the modern burial of a domesticated cat. Two other intrusions, Contexts 6/7 and 8/9, were postholes that were about 60 and 40 cm deep, respectively. These may have been utilized to place poles utilized in a possible 1970s consolidation of the Open Chapel, according to local archaeologists. Context 10/11 comprised a deliberate, shallow (less than 10 cm) cut into the floor, which was used to create a fire. Finally, Context 15/16 was an irregular feature approximately 20 cm deep and filled with a good proportion of rock that we initially interpreted as a fill level. The soil sample that we collected from this context (approximately 5 liters) contained 310 examples of *Chenopodium murale* (see Chapter 7), an edible plant most well known as the foundation for the traditional Mexican dishes such as *quelites*. The plant is native to Mexico.

Context 4 was a decorative layer of stone that skirted the Open Chapel and covered the underlying foundation stones. Context 5 was the foundation itself (see Figure 4.4). As shown in the photograph, the Open Chapel was constructed nearly directly above, but did not significantly intrude upon, the courses of adobe floors that had constituted a Toltec-era building (see below for further details). We did not notice any obvious cut between the colonial foundation and the surrounding soil matrix in the profile for Section 1 (illustrated in Figure 4.4), and the ceramics in the layers next to the foundation (as well as the likely plaster floor, or Context 3) may provide support for the hypothesis that friars engaged in at least some leveling activities in the area surrounding the chapel. Judging by the protrusion of a Toltec-era pillar (see below) I believe that it is likely that the Spanish friars knew of and covered this building.

Fill layers (Contexts 12, 17, 19, 20, and 21) below the floor and the intrusions demonstrate a steady progression from colonial levels to Aztec levels to Toltec levels. Though these levels are arbitrary (10 cm levels within the larger fill layer), because we did not discern a clear soil change during excavations, their material pattern appears to be more indicative of at least some natural soil accumulation and/or activity levels than a single fill episode. Contexts 12 and 17 both contained colonial sherds, while 19, 20, 21, and 23 contained Aztec materials but no colonial materials (see Table 4.1). Context 24 contained only Tollan-phase diagnostic sherds. This pattern seems to suggest at least some Aztec occupation of the site before the arrival of the Spanish, though the occupation clearly increased in the area in colonial times. The absence of colonial sherds does not necessarily imply that the contexts were pre-Columbian, but the overall absence of colonial sherds and presence of Aztec sherds at lower levels is repeated throughout the site, a pattern that I interpret as evidence of a pre-Columbian Aztec-era occupation.

Figure 4.4: Profile view facing south in Operation 1, showing the decorative stone layer (Context 4) and the foundations of the Open Chapel (Context 5). We called the mini-excavation that revealed the foundation "Section 1."

The final levels of the unit revealed several courses of adobe floors, one of which had been covered with a lime plaster (see Figure 4.5). The circular structure that we have interpreted as a column was evidently constructed prior to these layers of adobe. The adobe features, the column, and the plaster floor (Context 25) collectively constitute a building that is most likely Tollan-phase, based on construction techniques. Given the scope of my project and research questions, it was not appropriate to expand the unit to reveal more of the structure. We did excavate a very small portion of the floor (approximately 50 cm x 50 cm) to collect ceramics that might provide clues regarding its antiquity; this excavation did not uncover any diagnostic ceramics, however. The available layers of soil (Contexts 26, 27, 28) below the stucco were quite thin. Below these we encountered layers of stone and more soil (Contexts 29,30,32) that may have formed part of a wall. This means that the structure was a pre-Columbian building, most likely Tollan-phase, that had been rebuilt several times, as was common in both Tollan- and Aztec-era constructions. At present, it is impossible to know whether the building had been re-inhabited during the Aztec occupation of the city and had, in turn, been visible to the colonial-era priests. However, it is likely that Spanish priests had some knowledge of its existence, given the protrusion of the stone pillar (Context 18, see Figure 4.5) as well as the proximity of the foundation of the Open Chapel to the adobe floors (see Figure 4.4).

Figure 4.5 Operation 1 at its termination, in plan view facing south. The low stone pillar is Context 18; adobe floors cover the unit and postdate the pillar. On the left in the foreground a stuccoed floor is visible; we excavated a small area of this floor (Context 25) to understand the construction sequence. This excavation was comprised of Contexts 26, 27, 28. The remaining unexcavated stone walls and soil levels (Contexts 29, 30, 32) can be seen in this view.

CONTEXT	Colonial #	%	Aztec #	%	Tollan #	%	Total #
1	0	0.0	15	100.0	0	0.0	15
2	0	0.0	0	0.0	1	100.0	1
3	4	7.1	31	55.4	21	37.5	56
6	0	0.0	0	0.0	0	0.0	0
8	0	0.0	1	25.0	3	75.0	4
10	0	0.0	0	0.0	1	100.0	1
12	1	1.2	45	53.6	38	45.2	84
15	3	25.0	4	33.3	5	41.7	12
17	2	7.1	3	10.7	23	82.1	28
18	0	0.0	0	0.0	2	100.0	2
19	0	0.0	0	0.0	17	100.0	17
20	0	0.0	5	25.0	15	75.0	20
21	0	0.0	1	25.0	3	75.0	4
23	0	0.0	1	33.3	2	66.7	3
24	0	0.0	0	0.0	24	100.0	24
25	0	0.0	0	0.0	0	0.0	0
26	0	0.0	0	0.0	0	0.0	0
27	0	0.0	0	0.0	0	0.0	0

Table 4.1: Chart showing diagnostic sherds by broad temporality in Operation 1. (Note that "Tollan" family will include Corral-phase diagnostic sherds.) For this and all similar charts, please see Appendix A, where I define the diagnostics for each broad occupation. Finally, for this and all similar charts, the blue bars are visual representations of proportional representation by temporality.

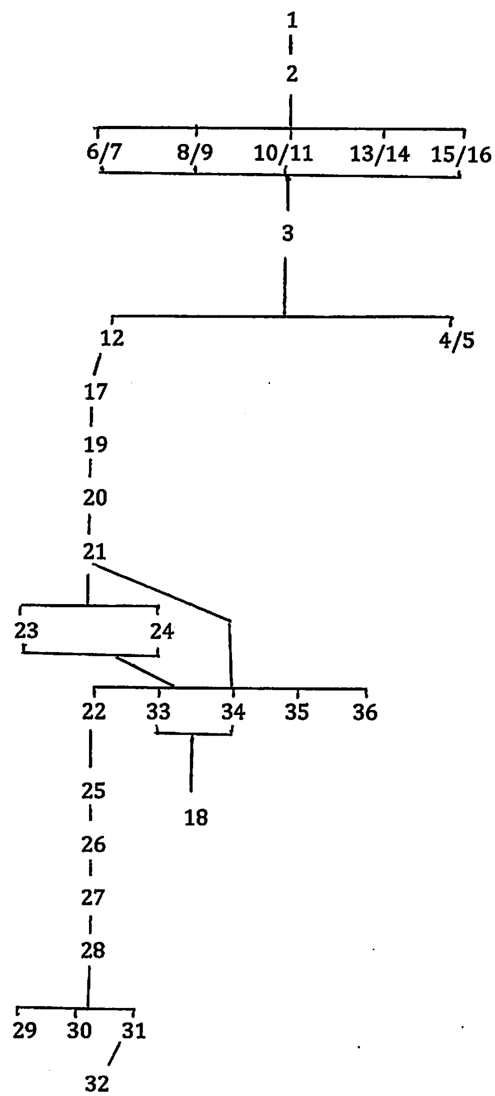

Figure 4.6: Operation 1 Harris Matrix.

Operation 2

Operation 2 is a 2m X 2m excavation unit located on a ridge to the northeast of the Open Chapel (see Figure 4.1). We opened this unit with the hope of finding evidence of refuse from the inhabitants of the chapel, especially possible food preparation contexts. Remarkably, our hunch regarding the placement of this unit produced exactly that result; we found evidence of a likely refuse pit, two likely cooking contexts, as well as a large quantity of ceramics. For details about the temporality of the ceramics found in these contexts, see

The ridge, where both Operations 2 and 5 are located, presents some challenges because it was more than likely used as a *milpa*, or local low-intensity agricultural field, before the Archaeological Zone of Tula became a protected zone in the 1970s. The contexts were therefore far from clear, but alternated erratically between highly compacted soils and loose soils. These continued for approximately 50 cm below our datum, comprising Contexts 1-9 (see Figure 4.11). Context 5/8 (the materials were inadvertently mixed together during excavations) contained the last evidence of colonial ceramics that we would find in the unit (see Table 4.2). These contexts also terminate at around the same point at which we can observe the first significant soil change in the wall profiles of Operation 2. Context 9, the last of these, contained the only evidence of European macrobotanical remains found during my excavations: an example of charred *Cicer arietinum*, or garbanzo (see Chapter 7).

Contexts 10 and 12 are most likely undisturbed Aztec contexts, while Context 11 may have been a shallow refuse pit with a loose soil matrix that intruded into Contexts 10 and 12. In the southeasternmost corner of Context 10, we discovered human remains that formed part of a possible pre-Columbian burial, judging by what appears to be the individual's articulated flexed position (see Figure 4.7). Because we would not be able to expand this unit in the three directions that would be necessary to expose it, we protected the burial with several layers of sterile soil and left a baulk around it, leaving it *in situ* for future excavators.

Figure 4.7. Photograph showing likely pre-Columbian human burial in the southeasternmost corner of Operation 2. The individual is likely an articulated flexed burial laying on his or her side, with portions of the left humerus, left femur, and left tibia showing. Detailed plan view facing east.

Figure 4.8: Likely refuse pit (Context 11, center), surrounded by Context 10 (compaction that includes a human burial in the southeast corner, see Figure 4.8). Plan view facing north.

Two important intrusions were revealed at the top of Context 12, at approximately 70 cm below our datum in both the northeast (Context 13/14) and southeast (Context 15/16) corners of the unit. We initially noticed two areas that appeared to have ash, and separated the materials from these and took soil samples. Both features had 5-10 cm of primarily ash, with mixed soil and ash below. Both of these intrusive contexts contained macrobotanical remains: Context 15 contained maize (*Zea mays*), while Context 13 contained *Chenopodium murale* (see Chapter 7).

Context 12 overlaid context 17 on the North side of the unit. Context 17 also appeared to be an intrusive feature, perhaps also related to Contexts 11 and 18/19, though this was much less clear in the stratigraphy.

Below these undulating levels, we found a flatter surface (Context 21 and 22, which are soils, as well as several adobe floors: Contexts 24, 25, and 26- refer to Harris Matrix in

Figure 4.11). The adobe floors and original soil had been disturbed by several intrusions, including Context 18/19, another refuse pit (compare the two in Figures 4.8 and 4.9). Though Context 11 appears to be a continuation of 18/19, my best interpretation is that it was cut at two separate times: once more deeply (18/19) and then cut in a wider, shallower fashion (Context 11). Alternatively, these contexts may constitute a single refuse pit with a single erratic cut.

The adobe floors and walls in Operation 2 may have been of Toltec construction, given that Tula was as an "adobe city" during the Tollan phase (this is known through modern archaeology: see Healan 2012). However, the material patterns (with the lowest level containing 96.4% Aztec diagnostic sherds) show that Aztec-era peoples had reoccupied the building and made several significant changes to it before the Colonial occupation. This unit thus constitutes important evidence that shows a relatively intensive Aztec-era occupation, and above this, intensive use of the same area during colonial times.

We terminated the excavation once all the fill had been removed, so that the entire floor of the unit was covered by pre-Columbian adobe. We left the adobe *in situ* so that future excavators could expand the excavations to better understand the original structure.

Figure 4.9: Contexts 18/19, plan view facing north. Possibly a continuation of the Context 11 refuse pit (See Figure 4.8 above and 4.10 below).

Figure 4.10: Operation 2 at termination, plan view facing south. The separate cuts of the various intrusions into the adobe are visible: at center, Context 11 forms the wider cut, while Context 18/19 is the smaller cut inside of it. Context 15/16 is at top right (see arrow); Context 13/14 is at bottom right (see arrow).

CONTEXT	Colonial #	%	Aztec #	%	Tollan #	%	Total #
1 surface	1	25.0	2	50.0	1	25.0	4
1	3	1.4	208	97.7	2	0.9	213
2	0	0.0	201	97.1	6	2.9	207
3	1	0.9	101	92.7	7	6.4	109
4	0	0.0	16	100.0	0	0.0	16
5 and 8	1	1.1	82	92.1	6	6.7	89
6	0	0.0	252	95.5	12	4.5	264
9	0	0.0	271	97.1	8	2.9	279
10	0	0.0	87	97.8	2	2.2	89
11	0	0.0	205	97.6	5	2.4	210
12	0	0.0	147	94.8	8	5.2	155
13/14	0	0.0	29	100.0	0	0.0	29
15/16	0	0.0	30	76.9	9	23.1	39
17	0	0.0	32	88.9	4	11.1	36
18/19	0	0.0	21	87.5	3	12.5	24
20	0	0.0	7	100.0	0	0.0	7
21	0	0.0	27	96.4	1	3.6	28
22	0	0.0	0	0.0	0	0.0	0

Table 4.2: Chart showing diagnostic sherds by temporality for Operation 2. (Note that Tollan family will include Corral-phase diagnostic sherds.)

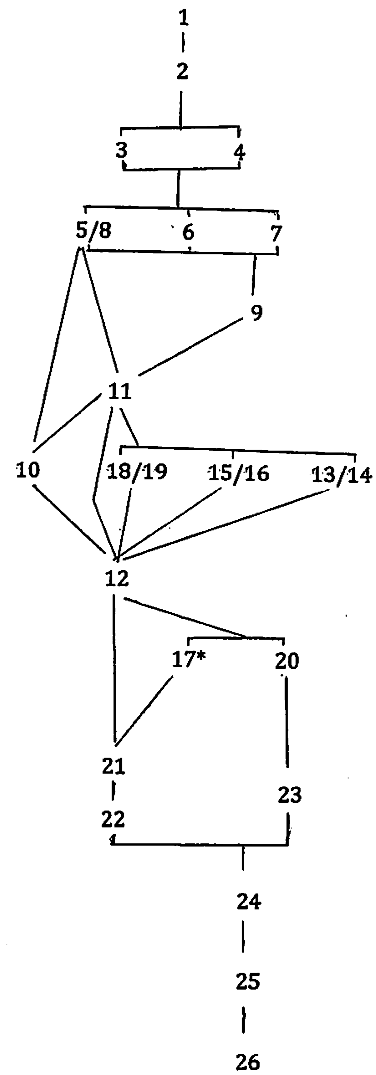

Figure 4.11: Operation 2 Harris Matrix

Operation 3

Operation 3 is located in such a manner as to abut the southern wall of the Open Chapel and the western walls of the sacristy. The western side of the unit is 3.98 m long; its eastern wall is 4.42 m long, and its southern side is 2 m wide. We established this unit to understand whether our observations from Operation 1 remained consistent on the other side of the building. We also wanted to discern the construction sequence of the Open Chapel's sacristy.

Contexts 1-4 in this unit consisted of relatively thin layers of modern soil deposits, including modern trash such as plastics. Below this, we found what we believe to be a colonial floor (Context 5), as well as a deeper level of modern fill in the southern side of the unit (Context 6). The soil below Context 5 did not contain modern materials such as plastic, leading us to believe that it was, in fact, a colonial floor that was later partially cut. Below these levels, we found several intrusive contexts. Context 8 was a krotovina (rodent run), judging by the fiber material that we found inside of it, as well as its unusual shape. Context 9 was a shallow (approximately 5 cm), roughly circular feature in the north-central portion of the unit, with remains of carbon and ash as well as bone, ceramics (primarily Aztec) and lithics. Context 10 was a shallow (approximately 2 cm) circular feature on the northwestern side of the unit that appeared to be simply a slightly deeper layer of fill. Context 12, also circular and quite shallow (1-2 cm deep), appeared to be a modern intrusion with modern materials (glass and plastic). Context 14 was likely a very early colonial refuse pit, given the loose soil and the huge quantity of broken ceramics (as well as spindle whorls, figurines, shell, and the largest quantity of ceramic sherds in this operation; see Table 4.3).

Contexts 13, 15, 16 and possibly 17 are all early colonial fill levels containing small quantities of colonial ceramics (though 13 and 17 contained only Aztec diagnostic sherds). The fact that the refuse pit (Context 14) and these levels were colonial early colonial but contained very minimal sherds diagnostic of the colonial era is part of a larger pattern that repeats throughout the Chapel excavations. Distinguishing colonial contexts from Aztec-era contexts is nearly impossible based on ceramics alone. Instead, I have had to rely upon a combination of careful stratigraphic excavations, ceramics, and other materials diagnostic of European settlement (such as European foodstuffs and animal remains, as in Operation 2 above). There are several possible explanations for this material pattern, which are addressed in Chapters 6 and 7.

The soil changed beneath Context 17, and we encountered minimal quantities of ceramics below the fill contexts. Contexts 18 and 20 appeared to be fill layers that only contained Aztec-era ceramics. Contexts 19 and 25 formed a single, large krotevina, likely created by a mammal known in Tula as a *tuza* (*Cratogeomys tylorhinus*, or a naked-nosed pocket gopher). Local people often attributed deep irregular rodent runs to these animals.

Below these levels, we began to find adobe blocks that likely formed floors or walls. We also found a pre-Columbian stuccoed floor (Context 21, 26). Diagnostic ceramics from these contexts were Aztec and Tollan-phase (see Table 4.3).

As in Operations 1 and 2, we found evidence of several courses of adobe floors in Operation 3 (see Figures 4.12-4.14), as well as fragments of stucco floors (see Figure 4.13 foreground). The adobe floors and walls were not as intact as they had been in Operation 1; as in Operation 2, they had been disturbed by later pre-Columbian activities (see final plan view for the operation in Figure 4.14).

However, this unit was especially instructive in that we found evidence of two enormous pre-Columbian walls (Contexts 40 and 41). Context 40, the north-south wall, had been constructed first, and the sacristy of the Open Chapel was constructed directly on top of it (see 4.16). Context 41, the east-west wall, was built second. At the very bottom of Context 40, embedded within the wall, we found four large sherds that were diagnostic Aztec ceramics (see Figure 4.15). Though this area of the wall abutted the *tuza* rodent run, we find it unlikely that rodents could have carried these sherds to this area. Our tentative interpretation is that these walls represent Aztec-era constructions, a hypothesis that will have to be tested during future excavations.

Figure 4.12: Context 30 in plan view, facing north. This context forms part of a group of contexts beneath Contexts 21/26 (see Harris Matrix in Figure 4.19). As in the other operations, adobe-brick floors and walls (clearly visible above) cover the excavation units at the lowest levels.

Figure 4.13: Section 1 of Operation 3 in profile view, facing north. (Greater detail at right.) This section was excavated to show the foundations of the Open Chapel. The section shows a pattern similar to the one that we found in Operation 1, namely, that the foundation is relatively short and does not significantly interfere with existing pre-Columbian architecture; rather, it overlies pre-Columbian contexts. Aztec interventions likely caused many of the modifications that we observed.

Figure 4.14: Operation 3 at termination, in plan view facing north. Note that the sacristy is constructed directly on top of the pre-Columbian wall (on the right, or eastern side, of the unit—note the difference in orientations). The east-west wall in the foreground is also pre-Columbian and postdates the north-west wall. The southern wall of the Open Chapel, its decorative layer, and its foundation are visible in the background.

Figure 4.15: Southern side of the east wall, profile view facing Context 40 (pre-Columbian wall). At the bottom right a few of the Aztec-era ceramic sherds are visible. These were embedded in the profile of the wall.

Context	Colonial #	%	Aztec #	%	Tollan #	%	Total #
Surface	0	0.0	5	100.0	0	0.0	5
1	0	0.0	5	83.3	1	16.7	6
2	5	41.7	7	58.3	0	0.0	12
3	3	37.5	5	62.5	0	0.0	8
4	3	5.5	48	87.3	4	7.3	55
5	1	12.5	5	62.5	2	25.0	8
6	0	0.0	19	82.6	4	17.4	23
7	1	2.7	34	91.9	2	5.4	37
8	0	0.0	2	66.7	1	33.3	3
9	0	0.0	17	89.5	2	10.5	19
10	0	0.0	7	63.6	4	36.4	11
11	5	50.0	4	40.0	1	10.0	10
12	0	0.0	0	0.0	0	0.0	0
13	0	0.0	24	75.0	8	25.0	32
14	0	0.0	90	90.0	10	10.0	100
15	2	6.5	19	61.3	10	32.3	31
16	2	22.2	3	33.3	4	44.4	9
17	0	0.0	17	58.6	12	41.4	29
18	0	0.0	3	42.9	4	57.1	7
19	0	0.0	2	100.0	0	0.0	2
20	0	0.0	0	0.0	2	100.0	2
21	0	0.0	3	42.9	4	57.1	7
23	0	0.0	0	0.0	3	100.0	3
25	0	0.0	0	0.0	1	100.0	1
26	0	0.0	1	100.0	0	0.0	1
27	0	0.0	0	0.0	4	100.0	4
28	0	0.0	0	0.0	1	100.0	1
29	0	0.0	0	0.0	0	0.0	0
31	0	0.0	0	0.0	0	0.0	0
40	0	0.0	4	100.0	0	0.0	4
41	0	0.0	3	100.0	0	0.0	3

Table 4.3: Chart showing diagnostic sherds by temporality for Operation 3. (Note that "Tollan" family will include Corral-phase diagnostic sherds.)

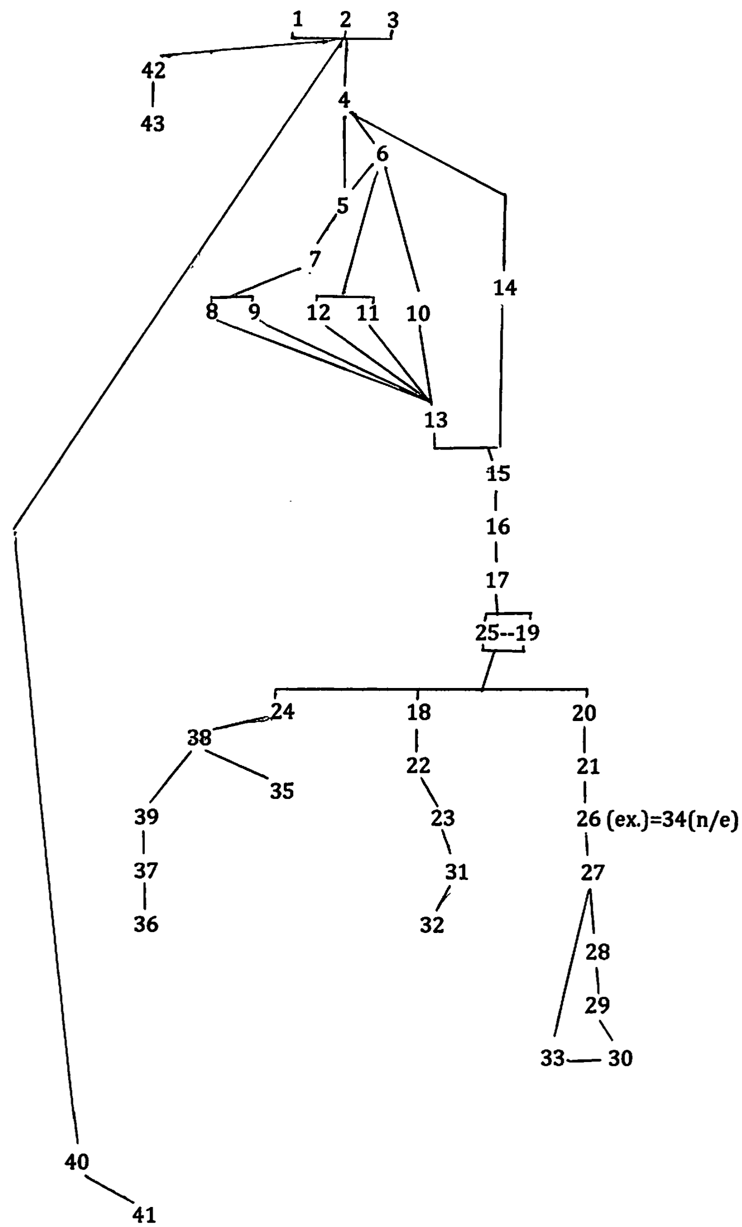

Figure 4.16 Operation 3 Harris Matrix

Operation 4

Operation 4 is a 2m x 2m unit located at the edge of the ridge that lies to the south of the Open Chapel. We excavated this unit in order to investigate whether the flat area surrounding the Open Chapel was partially augmented by human activity (i.e. a man-made platform). Some local archaeologists and excavators had speculated that this area may have had stairs, given the slope from the Chapel area to the levels below.

This unit was difficult to excavate for several reasons: its extreme slope, the large area of adobe wall fall that we did not wish to disturb, bioturbation from a medium-sized tree in the northwest corner, and the highest levels of rodent disturbances that we found at the Chapel location (e.g., Contexts 12 and 13, see Figure 4.18). As a result, we have less confidence in the stratigraphy of this operation than any other unit at the Chapel site. However, the excavation did allow us to answer our original question: we discovered that the ridge had been surrounded (at least in this area) by a tall adobe wall. This makes it quite likely that the ridge was at least partially artificial, forming a man-made platform.

Contexts comprised soil accumulations until the area around Contexts 14, 15, and 16, beneath which we found a very large area of wall fall that occupied over a quarter of the unit, on the northeastern side of Operation 4 (see Figure 4.17). Evidence of colonial sherds was rare in general for this unit (only 7 examples in the entire operation, see Table 4.4), but ceased completely below the wall fall context (see Figure 4.19).

In this unit, as in others, we encountered evidence of pre-Columbian adobe bricks on the southern side of the unit (Context 27). Context 28 intruded into these bricks in the southernmost part of the unit, consisting of what was likely a pre-Columbian human burial. Because we were aware that we would not have time to properly excavate the burial, it was protected and left *in situ* for future excavators.

One of the lowest excavated levels, Context 22, was a soil layer that contained Aztec-era diagnostic sherds (Aztec III and Aztec Black-on-Red). Though ceramics were, in general, scarce below the wall fall level, this appears to suggest that this operation follows the same pattern that we had observed in previous excavations at the site: colonial-era contexts overlay an Aztec-era occupation that may have taken advantage of Toltec-era architecture (adobe floors). Future excavations within a project that has the goal of investigating the Toltec-era remains at the Open Chapel site will be better equipped to answer questions about the nature of these Tollan-phase constructions.

Figure 4.17: Operation 4 in profile view, facing north. Note the wall fall that covered a significant portion of the unit in the foreground of the photograph. An adobe wall covers most of the northern profile of the operation.

Figure 4.18: Operation 4 in plan view, facing south, after excavating contexts 12 and 13. The photograph demonstrates the extreme rodent disturbances in the excavation unit.

Context	Colonial #	%	Aztec #	%	Tollan #	%	Total #
General	0	0.0	1	50.0	1	50.0	2
Surface	0	0.0	2	100.0	0	0.0	2
1	1	4.2	19	79.2	4	16.7	24
2	2	2.7	65	89.0	6	8.2	73
4	1	11.1	8	88.9	0	0.0	9
5	0	0.0	29	93.5	2	6.5	31
6	0	0.0	31	96.9	1	3.1	32
7	1	2.4	31	73.8	10	23.8	42
8	0	0.0	17	100.0	0	0.0	17
9	0	0.0	4	100.0	0	0.0	4
10	0	0.0	44	84.6	8	15.4	52
11	0	0.0	117	81.8	26	18.2	143
12	0	0.0	21	75.0	7	25.0	28
13	0	0.0	3	100.0	0	0.0	3
14	2	5.6	33	91.7	1	2.8	36
15	0	0.0	6	85.7	1	14.3	7
16	0	0.0	46	64.8	25	35.2	71
18	0	0.0	1	14.3	6	85.7	7
20	0	0.0	0	0.0	5	100.0	5
21	0	0.0	0	0.0	0	0.0	0
22	0	0.0	2	28.6	5	71.4	7
23	0	0.0	0	0.0	1	100.0	1
25	0	0.0	0	0.0	2	100.0	2
Section 1	0	0.0	0	0.0	4	100.0	4

Table 4.4: Chart showing diagnostic sherds by temporality for Operation 4. (Note that "Tollan" family will include Corral-phase diagnostic sherds.)

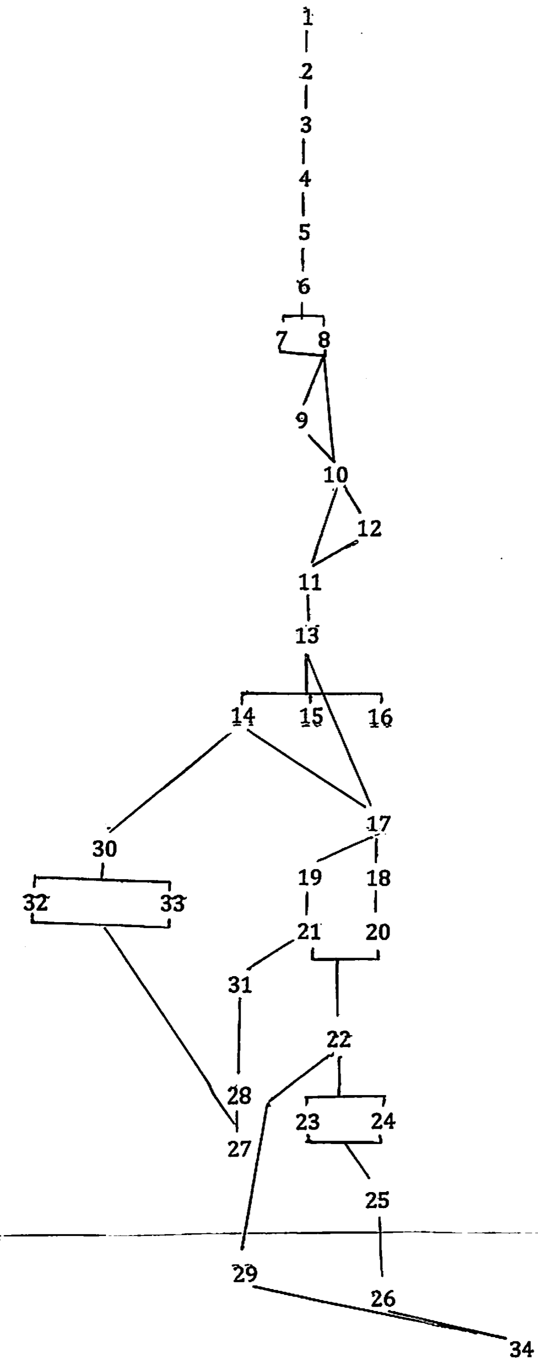

Figure 4.19: Operation 4 Harris Matrix.

Operation 5

Operation 5 was a 2m X 2m excavation unit located to the east of the Open Chapel (see Figure 4.1). The majority of the unit was taken up by a low structure that we encountered approximately 40 cm below the surface. The structure is built using small-stone veneer as a facing (that is, stacked pieces of wide and relatively thin pieces of limestone, see Figure 4.22). The surface was then covered with a lime plaster. This method is an iconic Toltec architectural technique, primarily used for benches, altars, and columns (Healan 2011:63). Given its shape and the use of the Toltec small stone technique, this structure may have been a Toltec-era altar, though the evidence is inconclusive. The nearby presence of another Toltec-phase structure in Operation 1 lends support to the idea that this structure formed part of a larger Toltec-era settlement.

The structure in Operation 5 covered approximately 60% of the excavation unit (see Figure 4.22, Figure 4.23). It had been disturbed by bioturbation from a large tree stump in the northwest corner of the excavation unit (Context 20). There was also evidence of a small *saqueo* (looter's pit), or possibly, a previous excavation (Contexts 7 and 13); this disturbance is visible in Figure 4.21 at the southern side of Operation 5. Another disturbance (Context 8) appeared to be a rodent run; this is visible in Figure 4.23 in the central portion of the unit. Context 18 was a cut that intruded into the adobe floors, dividing the adobes from the Toltec structure (see Figure 4.23 plan view map).

As in all other excavation units at the chapel location, we found adobe floors at the lowest levels that we excavated in Operation 5 (see Context 27 in Figure 4.23). Some of the lowest levels excavated near these adobe floors contained Aztec-era diagnostic ceramics (see Context 18 in Table 4.4). This excavation unit therefore appears to follow a similar pattern to the rest of the units excavated at the Open Chapel: we observe mixed early colonial and Aztec-era materials, overlying exclusively Aztec-era contexts, that are in turn found on top of Toltec-era constructions.

Figure 4.20: Operation 5 in plan view facing east. This photograph shows the likely Toltec-era construction with Toltec Small Stone facing. To the east of the facing, the stuccoed covering is visible. We removed the stucco (Context 25) at the end of our excavation to attempt to discern the temporality of the structure. The result is shown in Figure 4.26.

Figure 4.21: Detail at termination of Operation 5, in plan view facing south. The Toltec structure is on the left; the right shows disturbance caused by a tree root. Context 28 (in the center of the photograph) may have constituted part of another wall, but this was so disturbed that it will be necessary to expand the unit in future excavations to determine its significance.

Figure 4.22: Operation 5 at termination, in plan view facing east.

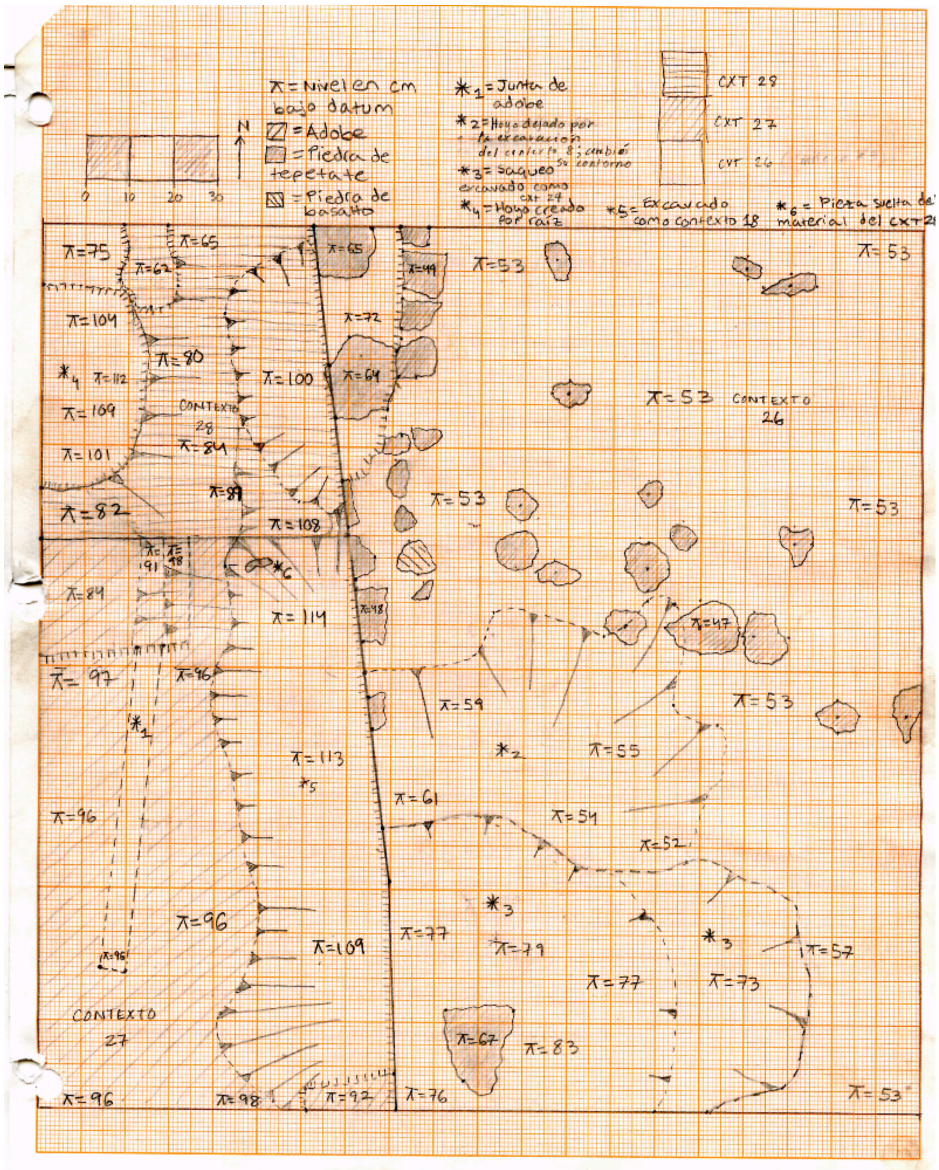

Figure 4.23: Plan view map of Operation 5 at closing, showing Contexts 26 (Toltec structure), 27 (adobe floors), and 28. The depression that abuts the southern wall appears to have been a looter's pit. The depression that abuts this feature in the central part of Context 26 was likely a disturbance caused by rodents.

Context	Colonial #	%	Aztec #	%	Tollan #	%	Total #
1	8	6.9	104	89.7	4	3.4	116
2	16	3.9	372	91.0	21	5.1	409
3	0	0.0	4	80.0	1	20.0	5
4	2	4.8	39	92.9	1	2.4	42
5	0	0.0	49	89.1	6	10.9	55
6	0	0.0	37	86.0	6	14.0	43
7	0	0.0	23	92.0	2	8.0	25
8	0	0.0	4	80.0	1	20.0	5
9	0	0.0	1	50.0	1	50.0	2
10	0	0.0	12	70.6	5	29.4	17
11	0	0.0	6	60.0	4	40.0	10
12	0	0.0	3	100.0	0	0.0	3
13	0	0.0	32	94.1	2	5.9	34
14	0	0.0	14	63.6	8	36.4	22
15	0	0.0	6	60.0	4	40.0	10
16	0	0.0	6	100.0	0	0.0	6
17	0	0.0	5	55.6	4	44.4	9
18	0	0.0	3	42.9	4	57.1	7
24	0	0.0	0	0.0	0	0.0	0
25	0	0.0	0	0.0	3	100.0	3

Table 4.5: Chart showing diagnostic sherds by temporality for Operation 5. (Note that "Tollan" family will include Corral-phase diagnostic sherds.)

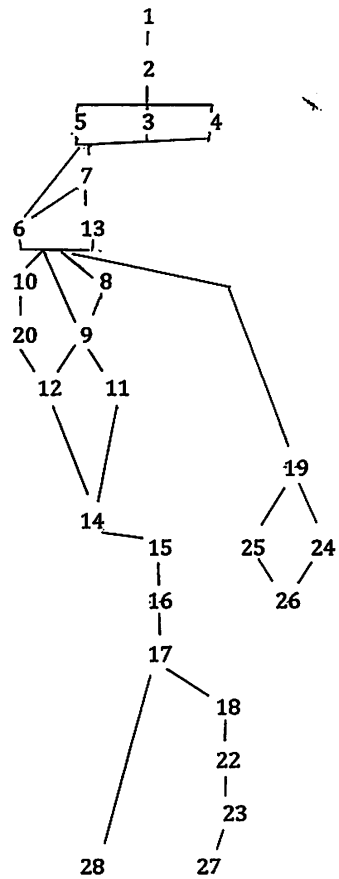

Figure 4.24: Operation 5 Harris Matrix

4.3 CATHEDRAL OF SAN JOSÉ

Operation 6

Operation 6 is a 2m (east-west) by 6m (north-south) unit on the western side of the atrium of the Cathedral of San José. This excavation included the most complicated stratigraphy that we observed at either site. This was in part due to the fact that the platform of the Cathedral consisted of multiple prehispanic fill layers, which were modified again in the colonial period. Occasionally, colonial intrusions were initially indistinguishable from the general fill. Specifically, during the final days of the project we encountered a colonial-era burial (Context 55) approximately 2m below the surface that was certainly from the colonial era and whose burial shaft was nearly impossible to see within the various fill contexts.

In order to better illustrate the sequence of the contexts, I have divided the unit into several sections (see Figures 4.28). These are correlated with different sections of the Harris Matrix for Operation 6 (Figure 4.30).

Contexts 1-7 were successive levels of modern, historical, and colonial fill, ending at approximately 59 centimeters below our datum (this pattern is almost identical to what we observed in Operation 7; these levels appear to have been built up and/or artificially laid down during the five centuries between the construction of the Cathedral and modern times). The last of these were compact, cement-like soils. These ended in what appeared to be various colonial surfaces from the time that the Cathedral was created.

Features that we initially interpreted as walls began to appear on the southern side of the unit at approximately 75 cm below our datum; other walls eventually appeared throughout the unit. We discovered that all of the walls formed part of a "box" construction style that was typical for building platforms in the Toltec era (Healan 2012:63). The technique involves constructing walls with large stones (in this case *cantera*), and then filling the "boxes" with alternating materials, including smaller boulders (such as basalt or more *cantera*) or soil. These are clearly visible in Figure 4.27 and Figure 4.28.

In addition to the stone boxes, we also encountered a large semi-circular area of colonial-era fill, approximately 3.5 meters wide on the western profile and 80 cm deep. Though we recognized this context immediately, we did not realize how large it would be or what purpose it served. We discovered that this feature took up the majority of the western side of the unit (see Figures 4.25, 4.26). This feature is identified as "colonial fill sequence" in the maps, photo, the Harris Matrix, and the ceramic sequences below and in Figure 4.30.

The contexts beneath Context 12 are on the northernmost side of Operation 6 and probably represent the least disturbed stratigraphic sequences (northeast and northwest sequences, see Figure 4.28 and Table 4.9). The northwest sequence also represented the deepest excavation in the operation, terminating at 2.21 m below datum. The last four levels in this sequence contained significant amounts of diagnostic ceramics. These were exclusively Tollan-phase or earlier (see Table 4.9). These data provide further evidence for the conclusions that we reached at the termination of Operation 7, namely, that we are observing a Colonial structure that was built on top of a Toltec-era structure that had, in turn, been modified in the Aztec era.

Context 36 in this sequence represents a deep (from 98 cm to 1.68 m below datum) basalt rubble fill that was disturbed by the colonial fill sequence. Below the rubble fill, we found another fill of a different type (large *tepetate* stones). Within Context 36 we found 47 diagnostic ceramic sherds, only one of which was Aztec. While it is possible that the sherd may have fallen from earlier levels, I interpret this context as an Aztec addition to the Toltec platform. This hypothesis is strengthened by the fact that we found a similar fill change in the northwest sequence (Context 46) at a similar depth (1.6 m below datum, see also Figure 4.25 Operation 6 west wall profile).

The southeast central sequence constitutes successive layers of early colonial fills on top of Aztec-era fills, mainly fill within clearly delineated "construction boxes." As with other areas at similar depths, this fill contained small proportions of Aztec-era diagnostic sherds (see Table 4.8). It is worth noting that in this area we excavated to a depth of 2.03 meters below datum, but continued to encounter Aztec-era diagnostic sherds (see data for Context 57).

Finally, the colonial burial sequence represents contexts that included part of the colonial burial shaft (a hole dug deep in the ground to accommodate a human burial). We encountered the human burial (Context 55, Figure 4.29) toward the end of our excavations, at between approximately 1.4- 1.9 meters below datum. The individual interred in this area did not appear to have related funerary objects, but was buried in an extended position, with the feet toward the east and the head in the west, with arms folded across the chest (likely originally in a position of prayer).

Before beginning excavations at the Cathedral, we conferred with the Bishop of Tula as well as several of his advisors to determine what the religious community would prefer that we do in the likely event that we encountered a burial during our excavations. The religious leaders decided that they would prefer that we excavate, remove, and analyze any burials that we encountered. However, because we encountered the individual on the southernmost side of the unit, with the right arm beyond the limit of our excavations, we decided that it would be too time-intensive and would endanger the remains if we were to expand the unit. We therefore exposed what we could and documented the burial extensively with many photographs and a detailed map. We then protected the burial with many levels of sterile soil. The burial remains at the Cathedral site *in situ*.

An important contrast with the burials found at the Open Chapel during Carol Vázquez's excavations (Vázquez Cibrián 2013) is that the individual was buried alone, rather than in a communal burial context as was the norm for colonial burials at the Open Chapel site. Documentary evidence indicates that one of the early Franciscan priests at Tula, Fray Alonso Urbano (who died on the 19th of September in 1608) was buried at the monastery (Ballesteros García 2003:128). We therefore know that there was at least some precedent of burying priests in the atrium of the Cathedral, but to state with the data that is presently available to us it is impossible who the individual was. What is certainly clear in the comparison between the Open Chapel and Cathedral excavations is that there was a much greater tradition of human internment at the Chapel. In the colonial era it is possible that the parishioners would have been buried at a separate cemetery—they may have even continued to use the Open Chapel for this purpose. In Chapter 6 I compare this data with Acosta's Aztec burial data, and I provide data on other pre-Columbian burial patterns in Chapter 3.

In sum, then, Operation 6 made clear the successive constructive sequences present at the Cathedral site: the area was originally a Toltec-era platform that was modified in the Aztec period, and then significantly changed during the colonial era.

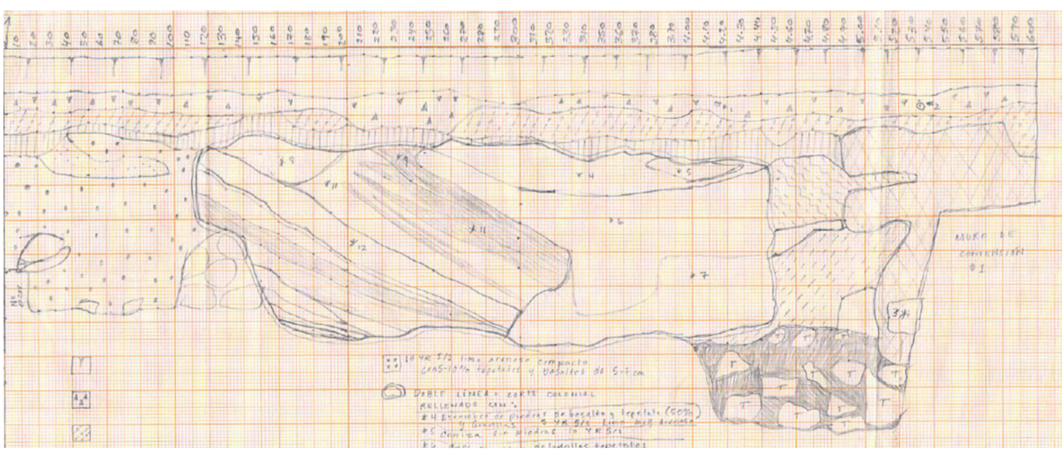

Figure 4.25: West wall profile at the termination of Operation 6. The central area (in double line) is an enormous colonial fill sequence, approximately 3.5 meters wide and 80 cm deep.

Figure 4.26: West wall profile, central portion in ¾ view facing west. The colonial fill sequence is visible.

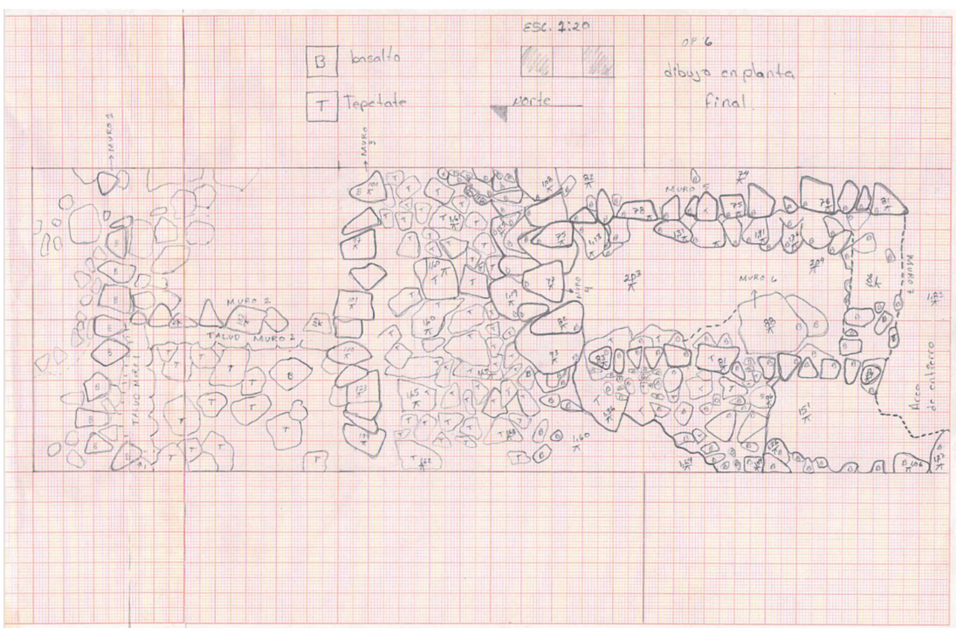

Figure 4.27: Plan view at the termination of Operation 6, with "construction boxes" visible in darker outline. A simple version is shown in Figure 4.33 below.

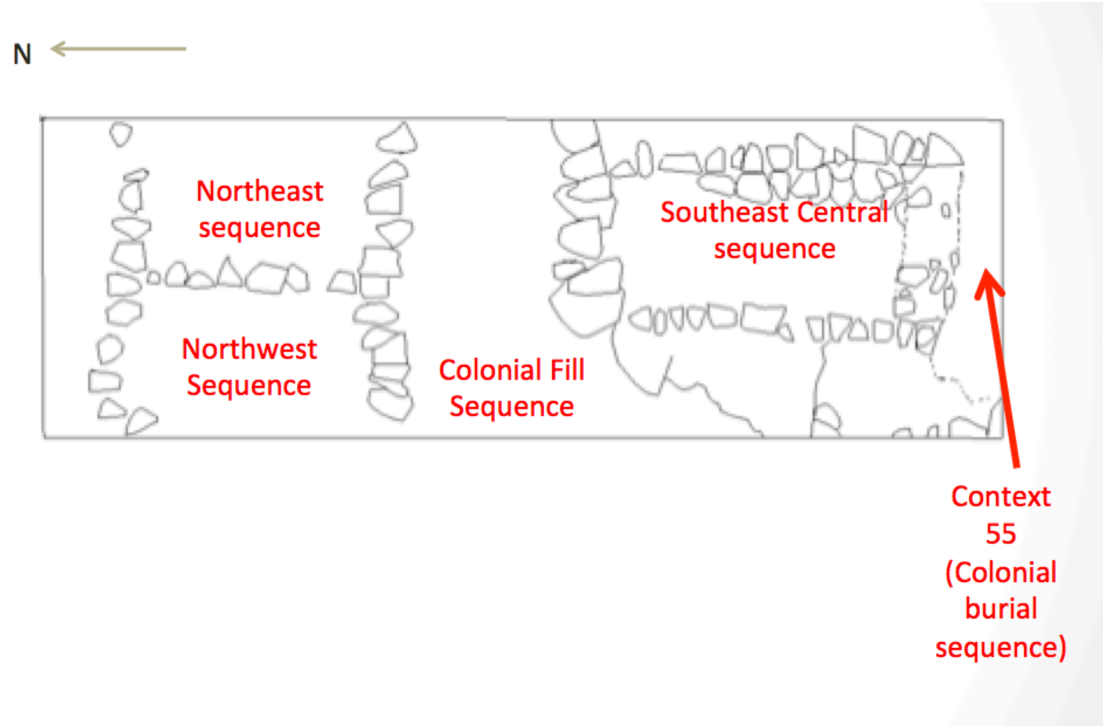

Figure 4.28: Simplified version of the final plan view of Operation 6. Context 55, the colonial burial context, is in the southernmost portion of the unit.

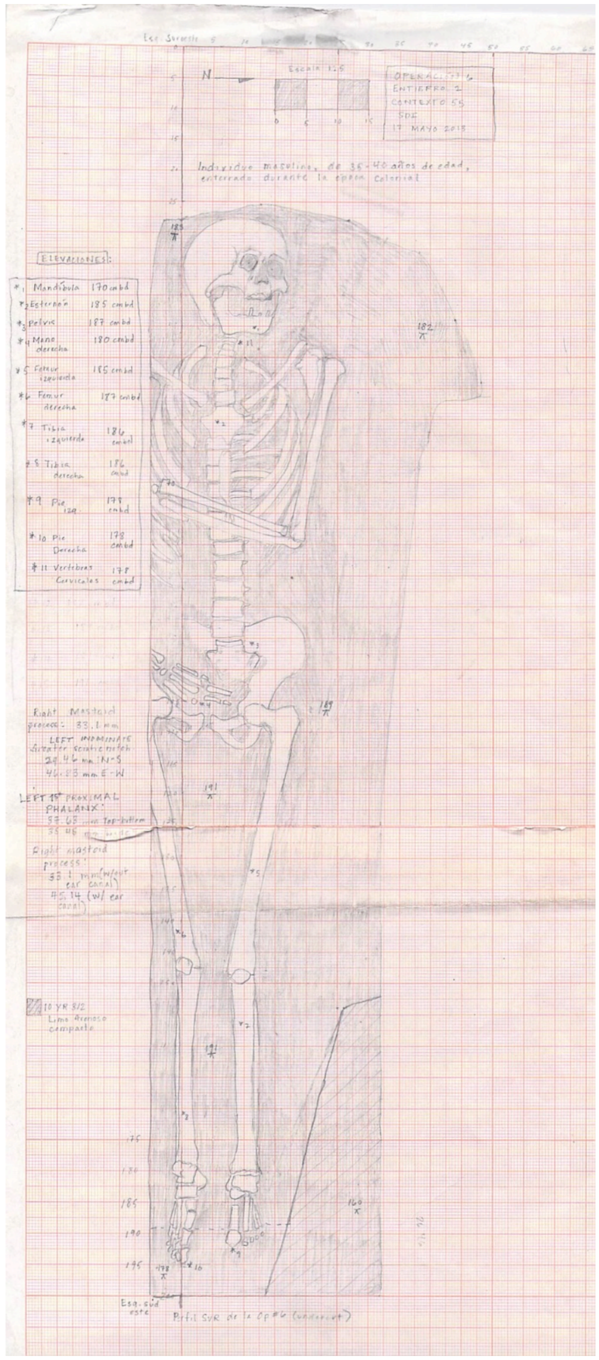

Figure 4.29: Map of human burial, Context 55, in plan view.

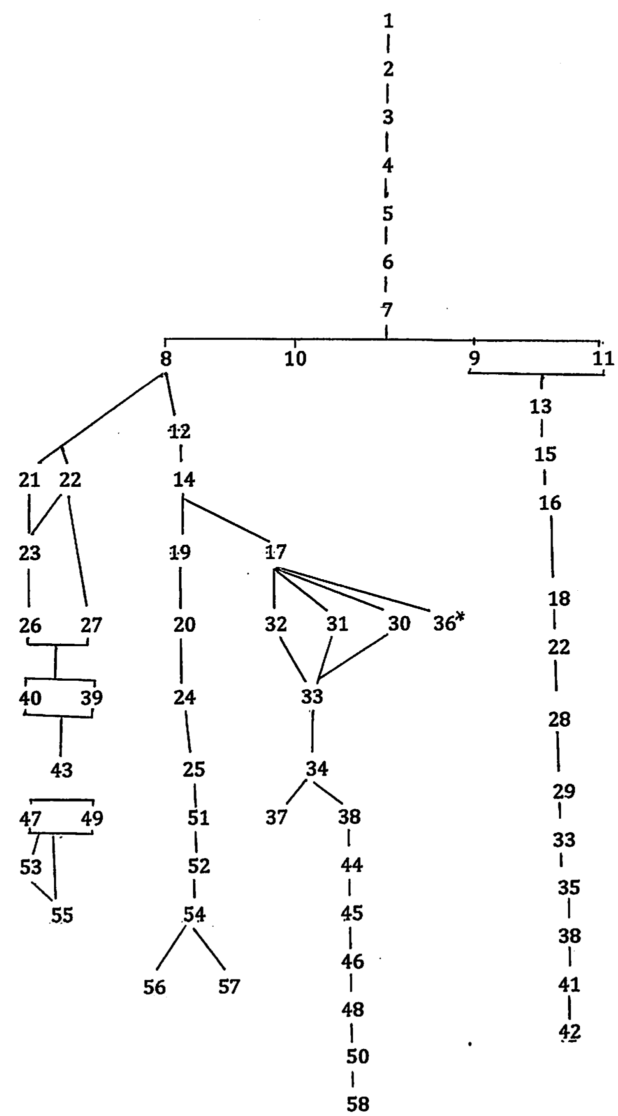

Figure 4.30: Operation 6 Harris Matrix. Contexts in the Context 42 group are the colonial fill sequence. Contexts in the Context 55 branch are the colonial burial sequence. Contexts in the 56/57 group constitute the southeast central sequence. Contexts 37 and above are the northeast sequence; contexts ending at 58 are the northwest sequence.

CONTEXT	Colonial #	%	Aztec #	%	Tollan #	%	Total #
1	19	100.0	0	0.0	0	0.0	19
2	26	35.1	7	9.5	41	55.4	74
3	125	55.1	16	7.0	86	37.9	227
4	202	48.0	16	3.8	203	48.2	421
5	5	8.5	23	39.0	31	52.5	59
6	3	60.0	0	0.0	2	40.0	5
7	67	19.5	99	28.8	178	51.7	344
8	16	2.8	49	8.6	504	88.6	569
9	1	0.9	12	11.2	94	87.9	107
11	0	0.0	8	28.6	20	71.4	28
12	1	0.2	49	9.1	487	90.7	537
13	0	0.0	11	10.2	97	89.8	108
14 & 14a	0	0.0	9	4.7	184	95.3	193
15	1	0.6	21	12.8	142	86.6	164
16	0	0.0	1	2.3	42	97.7	43
17	0	0.0	1	1.5	66	98.5	67
18	0	0.0	4	9.3	39	90.7	43
19	0	0.0	3	25.0	9	75.0	12
20	0	0.0	1	20.0	4	80.0	5
21	1	1.7	4	6.7	55	91.7	60
22	0	0.0	4	4.1	94	95.9	98
23	0	0.0	101	31.6	219	68.4	320
24	0	0.0	4	16.0	21	84.0	25
25	0	0.0	4	6.8	55	93.2	59
26	0	0.0	33	19.4	137	80.6	170
27	0	0.0	15	23.1	50	76.9	65
28	0	0.0	11	23.9	35	76.1	46
29	0	0.0	1	33.3	2	66.7	3
30	0	0.0	0	0.0	0	0.0	0
31	0	0.0	3	60.0	2	40.0	5
32	0	0.0	0	0.0	0	0.0	0
33	0	0.0	4	22.2	14	77.8	18
34	0	0.0	3	1.6	188	98.4	191
35	2	0.9	10	4.5	211	94.6	223
36	0	0.0	1	2.1	46	97.9	47
37	0	0.0	16	12.9	108	87.1	124
38	1	0.3	4	1.3	297	98.3	302
39	0	0.0	3	15.8	16	84.2	19
40	0	0.0	3	60.0	2	40.0	5
41	0	0.0	1	16.7	5	83.3	6
42	0	0.0	0	0.0	4	100.0	4
43	0	0.0	2	3.4	56	96.6	58
44	0	0.0	0	0.0	15	100.0	15
45	0	0.0	1	6.7	14	93.3	15
46	0	0.0	0	0.0	16	100.0	16
47	0	0.0	13	31.7	28	68.3	41
48	0	0.0	0	0.0	88	100.0	88
49	0	0.0	9	7.0	120	93.0	129
50	0	0.0	0	0.0	43	100.0	43
51	0	0.0	0	0.0	17	100.0	17
52	0	0.0	4	4.7	82	95.3	86
53	2	3.2	8	12.7	53	84.1	63
54	0	0.0	2	2.1	95	97.9	97
55	1	0.8	38	31.7	81	67.5	120
56	0	0.0	0	0.0	3	100.0	3
57	0	0.0	17	3.4	490	96.6	507
58	0	0.0	0	0.0	46	100.0	46

Table 4.6: Chart showing diagnostic sherds by temporality for Operation 6. (Note that "Tollan" family will include Corral-phase diagnostic sherds; "Colonial" will include majolica in use after 1810, such as Esquilitan and Guanajuato Polychrome, see Chapter 7)

CONTE	Colonial #	%	Aztec #	%	Tollan #	%	Total #
1	19	100.0	0	0.0	0	0.0	19
2	26	35.1	7	9.5	41	55.4	74
3	125	55.1	16	7.0	86	37.9	227
4	202	48.0	16	3.8	203	48.2	421
5	5	8.5	23	39.0	31	52.5	59
6	3	60.0	0	0.0	2	40.0	5
7	67	19.5	99	28.8	178	51.7	344
8	16	2.8	49	8.6	504	88.6	569
21	1	1.7	4	6.7	55	91.7	60
22	0	0.0	4	4.1	94	95.9	98
23	0	0.0	101	31.6	219	68.4	320
26	0	0.0	33	19.4	137	80.6	170
27	0	0.0	15	23.1	50	76.9	65
39	0	0.0	3	15.8	16	84.2	19
40	0	0.0	3	60.0	2	40.0	5
43	0	0.0	2	3.4	56	96.6	58
47	0	0.0	13	31.7	28	68.3	41
49	0	0.0	9	7.0	120	93.0	129
53	2	3.2	8	12.7	53	84.1	63
55	1	0.8	38	31.7	81	67.5	120

Table 4.7: Colonial Burial Sequence by temporality in Operation 6

CONTE	Colonial #	%	Aztec #	%	Tollan #	%	Total #
1	19	100.0	0	0.0	0	0.0	19
2	26	35.1	7	9.5	41	55.4	74
3	125	55.1	16	7.0	86	37.9	227
4	202	48.0	16	3.8	203	48.2	421
5	5	8.5	23	39.0	31	52.5	59
6	3	60.0	0	0.0	2	40.0	5
7	67	19.5	99	28.8	178	51.7	344
8	16	2.8	49	8.6	504	88.6	569
12	1	0.2	49	9.1	487	90.7	537
19	0	0.0	3	25.0	9	75.0	12
20	0	0.0	1	20.0	4	80.0	5
24	0	0.0	4	16.0	21	84.0	25
25	0	0.0	4	6.8	55	93.2	59
51	0	0.0	0	0.0	17	100.0	17
52	0	0.0	4	4.7	82	95.3	86
54	0	0.0	2	2.1	95	97.9	97
56	0	0.0	0	0.0	3	100.0	3
57	0	0.0	17	3.4	490	96.6	507

Table 4.8: Southeast central sequence by temporality in Operation 6

CONTE	Colonial #	%	Aztec #	%	Tollan #	%	Total #
1	19	100.0	0	0.0	0	0.0	19
2	26	35.1	7	9.5	41	55.4	74
3	125	55.1	16	7.0	86	37.9	227
4	202	48.0	16	3.8	203	48.2	421
5	5	8.5	23	39.0	31	52.5	59
6	3	60.0	0	0.0	2	40.0	5
7	67	19.5	99	28.8	178	51.7	344
8	16	2.8	49	8.6	504	88.6	569
12	1	0.2	49	9.1	487	90.7	537
17	0	0.0	1	1.5	66	98.5	67
30	0	0.0	0	0.0	0	0.0	0
31	0	0.0	3	60.0	2	40.0	5
32	0	0.0	0	0.0	0	0.0	0
33	0	0.0	4	22.2	14	77.8	18
34	0	0.0	3	1.6	188	98.4	191
37	0	0.0	16	12.9	108	87.1	124
38	1	0.3	4	1.3	297	98.3	302
44	0	0.0	0	0.0	15	100.0	15
45	0	0.0	1	6.7	14	93.3	15
46	0	0.0	0	0.0	16	100.0	16
48	0	0.0	0	0.0	88	100.0	88
50	0	0.0	0	0.0	43	100.0	43
58	0	0.0	0	0.0	46	100.0	46

Table 4.9: Northeast and northwest sequences by temporality

CONTE	Colonial #	%	Aztec #	%	Tollan #	%	Total #
1	19	100.0	0	0.0	0	0.0	19
2	26	35.1	7	9.5	41	55.4	74
3	125	55.1	16	7.0	86	37.9	227
4	202	48.0	16	3.8	203	48.2	421
5	5	8.5	23	39.0	31	52.5	59
6	3	60.0	0	0.0	2	40.0	5
7	67	19.5	99	28.8	178	51.7	344
9	1	0.9	12	11.2	94	87.9	107
11	0	0.0	8	28.6	20	71.4	28
13	0	0.0	11	10.2	97	89.8	108
15	1	0.6	21	12.8	142	86.6	164
16	0	0.0	1	2.3	42	97.7	43
18	0	0.0	4	9.3	39	90.7	43
22	0	0.0	4	4.1	94	95.9	98
28	0	0.0	11	23.9	35	76.1	46
29	0	0.0	1	33.3	2	66.7	3
33	0	0.0	4	22.2	14	77.8	18
35	2	0.9	10	4.5	211	94.6	223
38	1	0.3	4	1.3	297	98.3	302
41	0	0.0	1	16.7	5	83.3	6
42	0	0.0	0	0.0	4	100.0	4

Table 4.10: Colonial fill sequence by temporality

OPERATION 7

Operation 7 was a 6m (east-west) by 2m (north-south) unit on the northern side of the atrium of the Cathedral of San José. The unit revealed a remarkably clear stratigraphy, in contrast to Operation 6 and its multiple intrusions and modifications. This unit is thus allows for a much more straightforward presentation of the relationships between the Tollan phase, Aztec-era, and colonial occupation sequence.

Contexts 1-7 were successive layers of colonial, historic, and modern fill (See Table 4.11). Below these levels, we found what appears to be the original colonial surface of the atrium of the Cathedral. This level consisted of a tamped-earth surface (*apisonado,* Contexts 8, 9, and 10) as well as aligned stones that appear to constitute the foundations of a colonial building in the Cathedral's atrium that was not used after the colonial period (Contexts 11, 12, 13; see Figure 4.31). In Chapter 6 I discuss the implications of this building.

To preserve the foundations, we decided to expand our vertical excavation only in the easternmost portion of the unit. Our excavations below the colonial surface revealed colonial ceramics only in Context 8; below this, materials were exclusively pre-Columbian (see Table 4.10). Contexts 16, 18, 19, and 21 (See Figure 4.33 Harris Matrix) were all rodent runs. The contexts closest to the surface of the unit (14, 15, and 17) all revealed Aztec-era (Aztec III and IV[12]) ceramics. Contexts 20, 22, 23, 24, and 25 contained exclusively Tollan-phase ceramics.

This pattern lends credence to the hypothesis, strengthened by the evidence in Operation 6, that the Cathedral of San José was built upon a platform that had been

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[12] Aztec IV ceramics both precede and postdate the conquest. Post-conquest designs feature more naturalistic motifs. I provide an example of a colonial Aztec-tradition *molcajete* (mortar) in Chapter 7.

constructed in the Toltec era, modified and briefly reoccupied in the Late Aztec period, and finally modified in the colonial period.

One more piece of evidence from this operation provides support for this hypothesis. As was the case in Operation 6, Operation 7 showed evidence of a "*caja de construcción*" or "box" construction style that was used to form the tall platform that supports the Cathedral (see Figure 4.32). It is well known that Indigenous peoples supplied the labor to build early colonial Catholic religious monuments (Kubler 2012), and could thus have presumably utilized this technique in the colonial era. However, it is unlikely that the construction-box modifications to the Toltec structure are of colonial origin, given the fact that the materials are not mixed throughout. Further, the alignment in Operation 7 appears to indicate that the stones are aligned at an angle that is orthogonal to 17° north, which is the same as the urban plan for Tula Grande. This unit therefore allows us to confirm with a good degree of certainty that the Cathedral was a Toltec construction that had been reutilized in the Aztec era and significantly modified in the colonial period.

Figure 4.31: Operation 7 at its conclusion, in plan view facing east. Original Colonial-era surfaces (Contexts 8-10) and colonial foundations (Contexts 11-13) can be seen in the foreground. Subsequent contexts (14-25) were only excavated in the easternmost portion of the unit, in order to preserve the colonial evidence and to allow future researchers to expand.

Figure 4.32: Operation 7, plan view detail facing south, showing the easternmost portion of the excavation. The photo demonstrates the “box” construction technique, in which large stones (visible here in two alignments) formed “boxes” that were then filled with different materials: smaller stones, soil, or a combination of these.

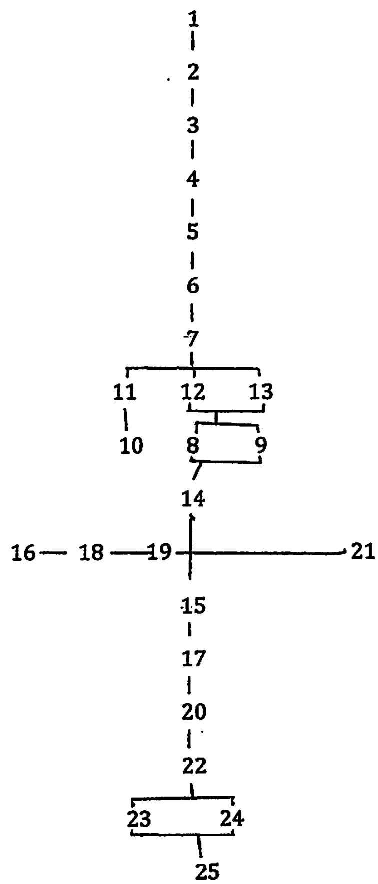

Figure 4.33: Operation 7 Harris Matrix.

Context	Colonial #	%	Aztec #	%	Tollan #	%	Total #
1	0	0.0	1	100.0	0	0.0	1
2	4	57.1	3	42.9	0	0.0	7
3	91	50.6	33	18.3	56	31.1	180
4	135	43.3	50	16.0	127	40.7	312
5	295	57.6	62	12.1	155	30.3	512
6	81	36.0	23	10.2	121	53.8	225
7	18	8.3	18	8.3	180	83.3	216
8	9	6.7	16	11.9	110	81.5	135
9	0	0.0	9	10.0	81	90.0	90
10	0	0.0	9	8.4	98	91.6	107
14	0	0.0	6	11.5	46	88.5	52
15	0	0.0	11	52.4	10	47.6	21
16	0	0.0	1	8.3	11	91.7	12
17	0	0.0	5	18.5	22	81.5	27
18	0	0.0	0	0.0	5	100.0	5
19	0	0.0	0	0.0	2	100.0	2
20	0	0.0	0	0.0	1	100.0	1
21	0	0.0	0	0.0	1	100.0	1
22	0	0.0	0	0.0	60	100.0	60
23	0	0.0	0	0.0	35	100.0	35
24	0	0.0	0	0.0	2	100.0	2
25	0	0.0	0	0.0	4	100.0	4

Table 4.11: Chart showing diagnostic sherds by temporality for Operation 7. (Note that "Tollan" family will include Corral-phase diagnostic sherds; "Colonial" will also include historics)

4.4 CONCLUSIONS

Previous research based on surface survey (e.g. Healan 2012:97, Mastache and Crespo 1974:76-77) indicates that late Aztec (Black-on-Orange III and IV) occupations in the Tula region and in Tula itself were extensive—possibly more extensive than during the Tollan phase—but not dense (Healan 2012). This finding is based primarily on surface survey collections, which compare the absolute number of Tollan-phase ceramics with the absolute number of Late-Aztec ceramics (Mastache and Crespo 1974). By the same measure, my data support similar conclusions at the Cathedral of San José (see the ceramic data in Tables 4.5 and 4.11), but data from the Open Chapel location indicate much higher frequencies of diagnostic Aztec ceramics (as compared to Tollan-phase ceramics) at four out of five excavation units at the Open Chapel site (see Tables 4.2, 4.3, 4.4, 4.5). From the ceramics alone, the Open Chapel looks like an Aztec-era site, while the Cathedral looks like a Toltec one (see the graphs of diagnostic ceramic data and my discussion in Chapter 7). To this data I add that by the late sixteenth century Tula's population of Indigenous people was 2,364 (Ballestros García 2003:128). By that time, however, the Indigenous population had already been subject to several waves of epidemic disease that literally decimated the population of central Mexico (Acuna Soto et. al 2002, Cook and Borah 1971:80). Richard Diehl (1983:166) estimated the late-Aztec population at around 20,000 people, which would be a good figure if one extrapolates from the late-sixteenth century figures combined with general demographic trends resulting from the terrible effects of epidemic disease (Cook and Borah 1971:80). This is indeed lower than the estimate of 60,000 people at Tula's Tollan-phase apex (Healan 2011:66), but still quite significant. My research and this population figure suggest that we should begin to consider Tula as a substantial Aztec-era site in addition to its existing status as a Tollan-phase site. These observations form an important context for my discussion of Aztec-Toltec relationships in Chapter 5.

Data from both the Open Chapel and Cathedral are consistent with previous research that has shown that late-Aztec occupations at Tula "mostly involved reoccupation and modification of existing Tollan phase structures" (Healan 2012:97-98). For example, we found two stone masonry walls in Operation 3 at the Open Chapel that appear to be late-Aztec phase, and that probably modified an existing Toltec building (though further excavations will be required to verify this hypothesis). In Operation 6 at the Cathedral, there appear to be two sets of box-style constructions: an later phase that dates to the late

Aztec period, and an earlier phase that dates to the Tollan phase. The stratigraphy in Operation 7 at the same site indicates a similar occupational sequence. These data show that while late Aztec settlement in Tula may have been relatively dispersed, Aztec-era peoples engaged in significant modifications to the Tollan-phase buildings of their predecessors. From a modern perspective, it is difficult to understand this settlement pattern. Diehl (1983:168) characterized Aztec-era Tula as "looted," "devastated," and "desecrated," stating "I doubt whether any local ruler would have been willing to use such a devastated area [i.e. Tula Grande] as his seat of power" (Diehl 1983:168, see also similar statements in Acosta 1941-1961). More and more, modern excavations (including the data provided in this chapter and in Chapter 5) will oblige us to question these kinds of value-laden interpretations. It appears that emic late-Aztec aesthetic standards emphasized intensive reuse and modifications of Toltec buildings. In Chapter 5 I explore the complex relationships of commemoration and ritual destruction that are evident at Tula, and suggest that we need to move away from the notion of Aztec-era settlement in Tula as opportunistic, simplistic, and ephemeral.

Finally, it is apparent from the transition from the Aztec-era to the colonial era in Tula that there is remarkable continuity in material culture. Indeed, apart from the colonial buildings themselves and a smattering of colonial pottery, there is little material evidence in Tula for the sweeping historical changes that occurred after the conquest of Mexico. In the chapters that follow, I explore some of the implications of these preliminary findings.

CHAPTER 5: HISTORY, MEMORY, AND POWER IN TULA

5.1. INTRODUCTION

In the previous chapter I discussed the preliminary findings of my excavations at Tula's Open Chapel and Cathedral of San José. Evidence from my excavations demonstrates a clear late-Aztec occupation that sometimes took advantage of existing Toltec structures. Similar findings have been demonstrated in other recent research (Figueroa Silva 1994, Healan 2012:97-98, 102). What accounts for the Aztec presence in Tula? Were they there as invaders and looters (Acosta 1941-1961) or simply there as the result of a late-Aztec population boom (Smith 2008:78) that caused northward expansion? What was the Aztec relationship to their predecessors?

Ethnohistorical documents related to narratives of the Toltecs provide some answers but also confound the issue. For example, "Toltec" is a Nahuatl word used to mean both "master artisan" and "inhabitant of Tula, Hidalgo." Tula is a corruption of the word "Tollan," a Nahuatl term that refers in a specific sense to Tula, Hidalgo (Healan 1989:3). But "Tollan" also has a more general meaning, "place of the reeds," which refers in a metaphorical sense to all great cities (Carrasco 1982:64-65, Smith 2008:24). In part because of these double meanings, even the precise location of the Tollan of the Toltecs that the Aztecs had written about so extensively was debated until the anthropologist and linguist Wigberto Jimenez Moreno presented convincing evidence that Tula was the historical Tollan in 1941 (Cobean and Mastache 1995:149, Davies 1977, Diehl 1983, Pasztory 1997:16). The debate over the existence of a historical Tollan centered in Tula, thought by archaeologists to have been settled with that publication, has recently resurged (Gillespie 2007).

Archaeological evidence does not strengthen the case: the physical remains of Tula might not immediately call to mind the remains of a major civilization without the aid of ethnohistorical sources. The ordinariness of the physical site of Tula did not match the grandeur of the great works ascribed to the Toltecs in Aztec descriptions (Helean 1989:5). This relative archaeological invisibility is due to several factors. First, Tula had a smaller urban population than both Teotihuacan and Tenochtitlan (estimated at 60,000 for the former versus approximately 100,000 people for both of the latter [Healan 1989:66]). Further, Tula was a city primarily built of adobe, a material that is much less durable than stone. Tula's ubiquitous adobe walls have crumbled in the nine centuries following Tula's collapse (Healan 2012: 63). Finally, despite several decades of modern archaeological research, Tula Grande (Tula's ceremonial center) remains the only fully excavated and restored section of a much more extensive monumental core (Healan 2012: 103).

Regardless of the many uncertainties about Tula, the Aztecs and their descendants celebrated Toltecs in histories (e.g. Sahagún 1961), poems and songs (Brinton 1969), monumental constructions in Tenochtitlan (Molina Montes 1983:103, Umberger 1987) and offerings in Tula (Acosta 1941-1961). In turn, this Aztec emphasis on the history and culture of the Toltecs has impelled archaeologists and historians to take Tula and the Toltecs seriously. In a way, Tula is important not only because it was the center of a large civilization, but also because a later civilization that we understand in much greater detail *insist* that it was important. Because of the Aztec emphasis on their relationship with the civilization that preceded them, most modern studies of Tula are simultaneously a study of the Toltecs as well as a study of Tula through an Aztec lens. Thus, my own research, which focused on the Aztec and Colonial material culture at Tula, is also necessarily a study of those populations' relationships with the Toltec past.

The nature of those relationships speaks to much broader debates regarding how to frame past societies' relationships with their own history. Are colonial Nahua documents that reiterate the story of the Toltecs a form of "memory"? Is history in the modern sense irrelevant for non-Western societies (Smith 2007), or did the Aztecs have a unique historiographical practice (Boone 2000b, cf. Leon Portilla 1965:155)? Is the concept of memory simply a jargony version of the archaeological standby of "influence" (Herzfeld 2004)—a term that has long been used to describe relationships between Mesoamerican civilizations? Is the notion of a historical Tollan based in Tula merely an archaeological myth based on a colonial fabrication (Gillespie 2007)?

In this chapter I address the current debate surrounding Tula by reframing it as an Aztec and colonial-era site. As my own excavations (see Chapter 4) and previous research (e.g. Acosta 1940-1961, Figueroa Silva 1994, Mastache and Crespo 1974) make clear, Tula had an extensive Aztec-era occupation, though its significance has been downplayed. Though the vast evidence of late-Aztec materials in these collections coincides with a major late-Aztec population boom in the Valley of Mexico (Smith 2008:78), I use theory related to history and memory (e.g. Trouillot 1995) to argue that Aztec-era interventions in Tula were directed toward three purposes: fixing the broader Toltec history in a single location, appropriating the city's history for legitimizing purposes, and commemorating the earlier civilization in religious ritual. To do so I combine Acosta's Aztec evidence (Chapter 3), evidence from my excavations (Chapter 4), and ethnohistorical data. Though previous research has proposed similar interpretations of the Aztec evidence at Tula (Umberger 1987), it has done so from the perspective of Tenochtitlan and its allied cities. A Tula-centric perspective allows for a more detailed interrogation of Aztec historical practice in that city. Further, this chapter illuminates Aztec religio-historical practices in Tula that contributed to its unusual colonial history (addressed in this chapter and Chapters 6 and 7).

5.2 SOCIAL MEMORY, HISTORY, AND "NERVOUS LANDSCAPES"

This chapter has been influenced by the concept of social memory and its relationship to history. Social memory focuses on "the construction of a collective notion (not an individual belief) about the way things were in the past" (Van Dyke and Alcock 2003:2). The concept has roots in the French *Annales* school of history (in Marc Bloch's work) and early French sociology (via Maurice Halbawach's work), though it did not gain traction until the 1970s (Lavabre 2009:364, Olick and Robbins 1998:106). Though most scholars working within a memory framework distinguish social memory from history, the nature of the difference between these two modes of understanding the past differ considerably: "…the shared conceptions, which preside over usage of the concept, can barely stand up to the complexity and heterogeneity of the phenomena unanimously called 'memory'" (Lavabre 2009:363). Memory is contingent upon axes of identity, group belonging, religion, and other affiliations (Van Dyke and Alcock 2003:2); it is popular and populist (Nora 1989, Samuel 1994); it comes "from below" organically, or through dialectical interaction with, or through defiance of official histories (Nora 1989, Samuel 1994:3-8); it may be manipulated to legitimize authority (Habsbawm and Ranger 1983, Van Dyke and Alcock 2003:3), or it may be asserted as an upward force to recall collective traumas in the face of state-sanctioned forgetting (the collective memories of Holocaust survivors or relatives of Argentina's *desaparecidos*, for example).

In sum, then, the only thread to run through the deeply heterogeneous field of social memory is its negative opposition to history: memory is a practice of relating to the past done by people who are not historians, using sources and methods that are not standard to historical practice, creating historical products that are not history books. While these polarities are ideal types that represent some social realities, and while separating social memory from history has been enormously productive, the general theme of social memory as non-history is problematic. First, the division underestimates the role of non-historians in creating both histories and the field of questions that history serves to answer (the *episteme*) while simultaneously overestimating the role of traditional historians (Trouillot 1995:20, Samuel 1994:3-8). Secondly, I argue that the division may falsely simplify the power dynamics inherent to the production of history: if history is the realm of a scientific approach to the past, and memory is simply an umbrella category for everything that is not, it is difficult to understand the similar forms of truth production that both operationalize; worse, the dichotomy reifies the differences. Finally, and relatedly, I argue that the division relies on an implicit assumption that there is a solid truth that may be discovered, if only we could agree on proper methods and sources (history), or if only we would take seriously our collective and less-official forms of past-making (memory)[13].

Even those scholars who are deeply skeptical of traditional history's ability to capture the reality of historical subalterns' lives will recognize that the range of narrative possibilities is not and must not be infinite, lest extreme relativism lead to mainstream acceptance of Holocaust denialism, for example (Trouillot 1995). Further, though narratives may be constructed and incomplete, they are nevertheless bound by the limits of historical reality and the traces it leaves (Trouillot 1995:13). Yet the rigor and supposed rationalism of traditional historiography leaves great gaps and silences in its wake: the poor, women, the enslaved, and all anthropological "others" of the past and present are but a few of the so-called "people without history" [14] (Fabian 1983, Wolf 1982). How, then, should researchers proceed, given that they are faced with the gaps but do not have access to the same wealth of resources to address the gaps? The anthropologist Michel Rolph Truillot reminds us that all social collectivities "impose a test of credibility because it matters *to them* whether those events are true or false" (Trouillot 1995:11, emphasis in the origninal).

Trouillot's thesis is that serious attention to the process of historical truth production (sources, archives, narratives, retrospective significance) serves to illuminate the uneven power that enters at each of these stages, the silences that these produce, and their consequences in the present (Trouillot 1995:26-30). Michel Foucault also insisted that truth is less important than understanding the *effects* of the historical process: "…the

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[13] See Trouillot 1995 for a similar argument regarding constructivism and relativism.

[14] I use this phrase ironically, after Eric Wolf's major study *Europe and the People Without History* (1982). In the introduction to that book, Wolf explains that the phrase originated from the writings of Marx and Engels, "who used it to signify their lack of sympathy for some national separatist movements in Europe" (Wolf 1982:xx).

problem does not consist in drawing a line which, in a discourse, falls under the category of scientificity or truth, and that which comes under some other category; rather, it consists in seeing historically how effects of truth are produced within discourses that, in themselves, are neither true nor false" (Foucault 1994:119, see also Foucault 1985). Though neither of these scholars discussed social memory at length, their observations regarding history and truth have important consequences for the history/memory divide. Both history and memory's claims to truth are contingent upon contexts of power. Their "objective" truth is less important the effects (social, material, biological, discursive) that the claims produce.

One effect of these claims is the production of historical silences. In 1521, the Spanish attempted to silence much of the glory of the Aztec past. Aztec temples and monumental art were destroyed, and Spanish mendicants destroyed many of the history books. Later, Franciscan mendicants and their informants painstakingly constructed new histories, but these were written in part to accord with European tastes (Gillespie 1989:xxxiv). These attempted Spanish erasures echoed previous Aztec imperialist tactics: indeed, the formation of the Aztec Triple Alliance in 1430 also marked the occasion of a massive history-book burning—a similar pattern of silencing foes and manipulating the past (León-Portilla 1965:155).

However, a power-focused approach to historical production and archaeological materials from this epoch shows that these imperial attempts at erasure were not as successful as they initially appeared to be. Instead, material traces point to inherently unbalanced, fragile, and interdependent systems in which power circulated (albeit unevenly) throughout: what Michael Taussig has called "nervous systems" (Taussig 1992, Byrne 2003). In this chapter I utilize a power-focused approach that addresses both Aztec and Spanish imperialism as nervous systems. My aim is to emphasize the ways that elites used history production in attempts to stabilize the fragile realm of the past for their own ends. I will argue that part of Aztec historical production relied upon convincing a regional public—including multiethnic commoners—that their version of the past was real. The very fact that the histories had to be "proven" in so many ways demonstrates the instability of Aztec historical manipulations, specifically at Tula. Later, in the colonial era, the Spanish depended on preexisting Aztec social structures, which also made the colonial system much more unstable than is commonly believed. In Tula in particular, Indigenous factions utilized traditional histories to manipulate their status within the rubric of the Spanish legal system. Colonial Indigenous people also compiled many (not always concordant) versions of the Tollan story (Nicholson 2001). If we accept that multiple versions of this story are "true," then the Aztecs' particular emphasis on a historical Tollan becomes more interesting. Why pin imperial claims to legitimacy on a city that, from our modern view, was so unspectacular?

5.3 THE JOURNEY TOWARD THE THEORY OF MANY TOLLANS

As I explain in detail below, the problem of truth has dogged the Tula debate. Understanding the Tollan story of the documents is important because it may illuminate the nature of early Postclassic relationships amongst coeval cities (e.g. Tula and Chichén Itzá), explain the nature of Tula's Tollan-phase apogee, and help us to understand how the Aztecs understood their own history. However, because of the linguistic issues surrounding the terms "Toltec" and "Tollan" described earlier and discrepancies between the documents, researchers have often wondered whether Tula was as important as some post-conquest documents make it seem (Gillespie 2007). Others say that Aztec documents are too "fragmentary, propagandistic, and mythical" to be useful as histories at all (Smith 2007:589-590), despite the fact that archaeology bears out many of the claims in post-conquest Indigenous documents (e.g. Mata-Míguez et. al. 2012). On the other hand, scholars who are less skeptical of documents pertaining to Tula also note that the sources contain a confusing array of evidence, particularly regarding Tollan and the Toltecs (e.g. Carrasco 1982, Nicholson 2001).

Confounding the issue are the relationships between the city (or cities) of Tollan, the people (or peoples) called the Toltecs, and a god known as Queztalcoatl Ehecatl, the feathered serpent, creator god, and the god of wind. Much confusion has surrounded the fact that the most prominent ruler of Tollan also bore the name Queztalcoatl. According to sixteenth-century chronicles, the priest named Topiltzin Ce-Acatl Queztalcoatl (or some combination of those names) was both the founder of Tollan and its ruler at the time of its demise, depending on the source (e.g. Davies 1977:372-373). The tale of this man-god and the fabled city is told in full in seventy-five sources, according to H.B. Nicholson, and was taught in the *calmecacs* (priestly or noble schools) of the Aztec empire (Carrasco 1982:76-77). Like the other concepts related to Tollan, the Queztalcoatl narratives point to multiple meanings and interpretations.

In one version of the story in which Topiltzin Queztalcoatl is a very virtuous priest, he is tricked into drinking pulque (an alcoholic beverage) by the god Tezcatlipoca (Tena, trans. 2011:43). This disgraces him and causes him to fall out of favor with his people (Diehl 1983:159,). Queztalcoatl's successor to the throne, Huemac, assumes rulership of Tollan, but is also tricked and disgraced by the god Tezcatlipoca (Diehl 1983:159, Davies 1977, Nicholson 2001). In another source, the *Historia de los Mexicanos por sus pinturas*, Tezcatlipoca informs Topiltzin that he must abandon Tollan to go to Tlapalla in Honduras (Nicholson 2001:6). The general theme is that Queztalcoatl, the god, is associated with Tollan in its mythical, "primordial" sense, and that Topiltzin Queztalcoatl is associated with an early Postclassic ruler who in several sources resided in Tollan Xicocotitlan. In most versions of the story, whether Topiltzin rules at the beginning or the end of Tollan's reign, the god Tezcatlipoca intervenes to drive Topiltzin out of the city (Davies 1977:372-373).

As Susan Gillespie (2007) has observed, Mesoamerican archaeological and ethnohistorical scholarship has flip-flopped repeatedly between two views to make sense of these stories. In one view, Tollan is a generalization, myth, or metaphor (the "many Tollans" view, or the "heterodoxic" view in Gillespie's formulation). The other posits Tula, Hidalgo as the Tollan to which the Aztecs referred (the "single Tollan" theory, or the "orthodox view" that persisted into the 1980s). Archaeological knowledge and ethnographic research have influenced the opinions on the topic since Desiree Charnay first began his unsystematic excavations in Tula in the late nineteenth century, which in turn influenced the interpretations of the ethnohistorian Eduard Seler (Gillespie 2007:194). A later ethnohistorian, Wigberto Jimenez Moreno (1941), produced the "definitive" identification of Tollan as Tula, Hidalgo based on toponyms (Cobean and Mastache 1995:149, Davies 1977, Diehl 1983, Pasztory 1997:16). In 1938 a team of preeminent Mesoamerican scholars (Jimenez Moreno, Alfonso Caso, Paul Kirchoff, and Ignacio Marquina) visited Tula, Hidalgo to determine potential sites for excavation based on the Jimenez Moreno identification (Cobean and Mastache 1995:149). Jorge Acosta, the archaeologist responsible for the excavation and restoration of Tula's ceremonial center, believed that Tula was the mythical Tollan and that the Aztecs had been responsible for its demise (e.g. Acosta 1940:187, 1944:155, 1956-57:75). Later archaeologists (e.g. Diehl 1983:29) accepted the Jimenez Moreno identification in combination with the Acosta evidence of a historical Tollan, whose evidence (in a typically circular fashion) had been based in part on the Jimenez Moreno identification. More recent archaeological scholarship has backed away from the idea that Tula was *the* Tollan, instead emphasizing the "many-Tollans" interpretation (e.g. Healan and Cobean 2012:372).

There is clear evidence from early colonial and pre-Columbian sources that Tollan refers to *both* a concept of urbanity *and* a real historical place- "real," at least, in the elite Aztec imagination. Before modern dating techniques, many ethnographers and archaeologists assumed that Teotihuacan, the imposing Classic-era city in Central Mexico, was the Tollan that the Aztecs referred to. Teotihuacan was and is still broadly acknowledged as a "primordial" Tollan (Boone 2000b, Carrasco 1982:109,186; Davies 1977:43, Stuart 2000, cf. Fash et. al. 2009)—the birthplace of the gods. However, many of the sources that refer to "Tollan" speak of a city that flourished during the early Postclassic

(Davies 1977, Jimenez Moreno 1941, Kirchoff, Güemes, and Reyes García, trans., 1989). Further, Teotihuacan lacks the linguistic toponym evidence to link it to the historical Tollan of the colonial documents.

More recently, David Stuart (2000) has marshaled hieroglyphic, historical, and archaeological evidence demonstrating that Teotihuacan was known as a Tollan in the Maya region during the Classic period[15]. That Teotihuacan was known as Tollan—an association that predates the colonial accounts by approximately a millennium—is unsurprising. Indeed, it points to historical processes whereby a real historical place with massive interregional influence (Teotihuacan) eventually acquired a mythical quality for the later Aztec population. Whether because the Aztecs could not imagine that such a great city was the work of historical humans rather than gods (Paztory 1997), or because their own religio-political ends required a less temporally remote Tollan, Teotihuacan's historical reality had been replaced by the sixteenth century with a "primordial" or "birthplace of the gods" connotation evident in the etymology of the Nahuatl word (Carrasco 1982:109). Nevertheless, scholarship has continuously recognized its central place as the Great or First Tollan even before David Stuart's (2007) groundbreaking epigraphic work (e.g. Carrasco 1982:126, see also Davies 1977:43 on Laurette Séjourné). The Aztecs also recognized its importance, taking artifacts from the city and placing them in Tenochtitlan, and making pilgrimages to the city (Berdan 2014:35, Fash et. al. 2009).

In addition to Teotihuacan, there are several other central Mexican cities that were known as Tollans. Tollan Chollolan, the city that is known today as Cholula in the state of Puebla, is one important example. The *Historia Tolteca-Chicimeca*, written between 1547

[15]This argument is based on a glyph that translates to "place of cattails" (equivalent to the Nahuatl Tollan meaning "place of the reeds"—Stuart 2000:466, 502). The glyph has been used as a toponym in Maya monumental art in Tikal, and found in association with central-Mexican style iconography at Acanceh and Copán. Stuart (2000) combines this with evidence that a new ruler at Tikal, Spearthrower Owl was an "outsider" from a foreign city in the West, and likely overthrew Tikal's indigenous dynasty. A parallel event happened in Copan, when another foreign ruler (Great Sun Green Quezal-Macaw)—who is frequently depicted in central Mexican costume—overtook the indigenous dynasty in that city-state. I refer readers to the original article, which presents a much more complex argument than is possible to summarize here.

and 1560, recounts that the priest-king of the Tolteca-Chicimeca visited Tollan-Chollolan in the twelfth century, following the collapse of Tollan. He eventually emigrated there and convinced his subjects to do the same (Carrasco 1982:135, Davies 1977:31-32, Kirchoff, Güemes, and Reyes García, trans., 1989). It bears mentioning that in the *Historia Tolteca-Chicimeca*, Tollan is both a place of origin (*la gran Tollan*) and a final destination (*Tollan-Chollolan*). Another important factor is that Cholula had a special religious status throughout the Classic period (the Teotihuacan florescence) that continued into Aztec times (the Tenochtitlan florescence); it bears no evidence of having been colonized by either city (McCafferty 2007:454). Unlike the Aztecs or the Toltecs of Tula, whose empires were based on militarism, Cholula's attraction was based on the administration of the Temple of Queztalcoatl, the largest temple in Mesoamerica, and its important status as a major interregional trading center (Carrasco 1982:135, McCafferty 2000:358).

Other important potential Tollans include the epiclassic peripheral capital of Xochicalco in Morelos, and the postclassic Maya city of Chichén Itzá in Yucatan (Carrasco 1982:126-133, 140-144). Debates regarding the relationship of Tula, Hidalgo and Chichén Itzá have raged since the 1870s (Gillespie 2007:92-93). Colonial Maya sources such as the *Popol Vuh*, the *Annals of the Cakchiquels*, the *Título de los Señores de Totonicapan*, the *Chilam Balam*, and the *Título C'oyoi* all make a reference refer to a place of origin for the Itzá called Tollan Zuiva or Civan (Davies 1977:35-40). Scholars have long noted the similarities between the colonial Maya accounts of colonization by the Itzá and the similarities between the archaeological sites of Chichén Itzá and Tula, Hidalgo. This in combination with central Mexican accounts of Topiltzin's exile to the East convinced many scholars that Toltecs from central Mexico had conquered the Maya region during the Postclassic. On the other hand, Chichén Itzá's "superior"[16] art and architecture convinced

[16] Gillespie (2007:108) quotes a long passage from Carlos Margain (1971:75), who puzzles over the idea that Chichen's art and architecture could be superior, while the documents "show without a doubt" that Chichen's influence came from Tula. Gillespie rightly uses this example to illustrate the ways that archaeologists neglect archaeological evidence when it is seemingly contradicted by documentary evidence. Though I think that the

many other scholars that the influence ran the other way (see Gillespie 2007:107, Davies 1997:48 calls this the "aesthetic" case against Tula). However, contributors to a recent comprehensive volume (Kawalski and Kristin-Graham, eds., 2007) generally reject the idea of unidirectional influence or "colonization," instead preferring a model of interregional interaction in which exchange, innovative political systems, and shared symbolism played a crucial role (Kristin-Graham and Kawalski 2007:66; see also López Austin and López Luján 2000, McCafferty 2007, and Chapter 2).

That there were many Tollans should by now be apparent, even without the vast archaeological and art historical evidence that could also be marshaled to strengthen the point. The consensus opinion on the Tollans of the early Postclassic (Kowalski and Kristan-Graham 2007, López Austin and López Luján 2000) point to a diverse, multi-sited web of elite religio-political interaction during that era. Does this finding make Aztec claims to a single Tollan based in Tula, Hidalgo a moot point? Was the Tula story purely an "archaeological myth," or a colonial-era fabrication in the service of Spanish administrators (Gillespie 2007:112)? Is colonial Mexica and late-Aztec historiography too "fragmentary, propagandistic, and mythical" to be utilized for any empirically-based history, thus negating the possibility of a Tula-based Tollan (Smith 2007:589-590)? On this last point, Elizabeth Boone (2000a:2) has pointed out that the pre-Columbian and colonial-era painted books "never had just one purpose or a situational context." The painted books and the colonial documents based on those books demonstrate a unique Aztec-tradition historical practice that makes clear their engagement with their own past. Though that engagement was sometimes propagandistic (in the Postclassic) and often related to land claims during the colonial era, the stories cannot be reduced only to those purposes.

sentiment of the criticism is apt, I do not agree with the point that "superior" art and architecture implies political or economic dominance. Maya art and architecture, after all, was "superior" to Teotihuacan's by most Western standards, yet the latter clearly had much greater political influence than any city-state in the Maya region.

In this chapter I argue that while there is ample evidence to support the notion of the "many Tollans" theory, this evidence is not mutually exclusive with a body of data that supports an Aztec emphasis on a Tula-as-Tollan narrative. If this is the case, the question shifts to whether some versions of the story are objectively "true" to the question of why certain versions of the story, especially the single Tollan story, exist in the first place, and what effects this had. In what follows, I bring together the evidence to show that while there were many Tollans, Tula, Hidalgo has been consistently recognized as a place that stood as the geographical and historical embodiment of Tollan to the colonial Nahuas and to the Aztecs: Tollan-Xicocotitlan, or Tula, Hidalgo. I present a reinterpretation of Acosta's data in light of more recent research at Tula. I use this evidence to claim that the archaeological interventions in Tula support at least two religio-political rituals: a termination ceremony in the early Aztec period, and a New Fire ceremony meant to "reanimate" the city in the late Aztec period. Finally, I argue that these Aztec emphases on a single, localized Tollan allowed colonial land claims to be possible, rather than the reverse (*contra* Gillespie 2007).

5.4 DOCUMENTARY ARGUMENTS FOR A LOCALIZED TOLLAN: AZTEC NEGOTATIONS AND APPROPRIATIONS OF THE PAST

As noted, Wigberto Jimenez Moreno first identified a historical Tollan Xicocotitlan (Tula, Hidalgo) based on the etymology of the word "Tollan," as well as several toponyms that matched place-names near Tula that were identified on an eighteenth-century map of the region (Jimenez Moreno 1941:80). These identifications were based primarily on the Fray Bernandino de Sahagun's *Florentine Codex* (Books 10 and 3), the *Anales de Cuauhtitlan*, and the *Historia de los Mexicanos por sus pinturas* (Davies 1977:40-41, Jimenez Moreno 1941), all very early colonial accounts[17] of Aztec history (Nicholson 2001:5, 23-

[17] Gillespie (2007:108) states that these sources are late-sixteenth century, which is accurate according to *terminus post quem* dates. However, several of the sources contain multiple dates. Various analyses of the texts and histories of their compilers indicate that the *Florentine Codex*, the *Anales de Cuautitlan*, and the *Historia de los Mexicanos por sus pinturas* were originally commissioned and compiled very shortly after

25). "Xicocotitlan," for example, means "next to the Xicococ," which Jimenez Moreno identified as the mountain called Jicuco or Xicuco near modern-day Tula (Davies 1977:40, Jimenez Moreno 1941:80). Other place-names identified with the historical Tollan that have been cross-referenced with existing or historical place-names in the vicinity of Tula, Hidalgo include: Xiippacoyan (modern San Lorenzo), Texcalapan (the Tula river), Xochitlán, Cincoc (a hill to the north of Tula), Huapalcalli, Tlemaco (modern Tlamaco, near the south of Tula) [Davies 1977:41]. In addition to the investigation conducted by Jimenez Moreno and other early linguists, Nigel Davies himself adds historical information from dynastic and religious histories. For example, Fray Juan de Torquemada's *Monarquia Indiana* (Vol. II) refers to the Temple of Queztalcoatl in Tula; Fray Diego Durán notes that Cortés' first gifts to Moctezuma were sent to Tula to be buried at the same temple (Davies 1977:41-42). Durán also notes Tula as the city in which the priest Topiltzin lived (Durán 1971:61). Other sources also point to a physical location for Tollan: Motolinía (1985:105), refers to the Nahua travels to "…Tollan, twelve leagues from Mexico [City] to the North" (a distance that can be roughly translated to 66 km). Davies also cites the dynastic ties between Aztec rulers and Toltec nobility, based on the *Crónica Mexicayotl* as evidence of the Aztec belief in a historical Tollan based in Tula (Davies 1977:42). A much later work, Donald Chipman's *Moctezuma's Children*, revealed the Aztec and colonial dynastic ties in much greater detail, and will be explored in greater detail later in this chapter (Chipman 2005).

It is clear from the documents that the Toltecs (in both senses) provided a template of civilization—art, language, time, myth, militarism, and rulership—for the emerging Aztec state (e.g. Berdan 2014:36, Chipman 2005, Smith 2008). The Aztecs credited the Toltecs with the discovery of medicine, the calendar system, and the "true language" of Nahuatl (Sahagún 1961, Book X, Chapter 29). Toltec achievements in civilization were "all good, all perfect, all wonderful, all marvelous" (Sahagún 1961, Book X:166). In the Sahagún

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conquest (Nicholson 2001:xxix-L). The accounts subsequently underwent several revisions; the compilation and organization of the *Florentine Codex*, for example, was Sahagún's lifework (Ricard 1966:39-45).

description of the Toltecs, the civilization at Tula stood as a synecdoche for all of the great early postclassic cities: "And these, the traces of the Tolteca, their pyramids, their mounds, etc., not only appear there at the places called Tula [and] Xicocotitlan, but practically everywhere they rest covered…" (Sahagún 1961, Book X:167). In this source, the memory of the progenitors of civilization is both generalized and localized to a particular, recognizable point on the landscape. To concretize this connection, the Aztecs participated in many interventions at Tula, including collecting artworks from the site: the Aztecs were Tula's first "excavators" (Acosta 1941-61, Umberger 1987). I explore that claim and other archaeological evidence below.

5.5 ARCHAEOLOGICAL INDICATORS OF A SINGLE TOLLAN: A NEW INTERPRETATION OF THE ACOSTA DATA

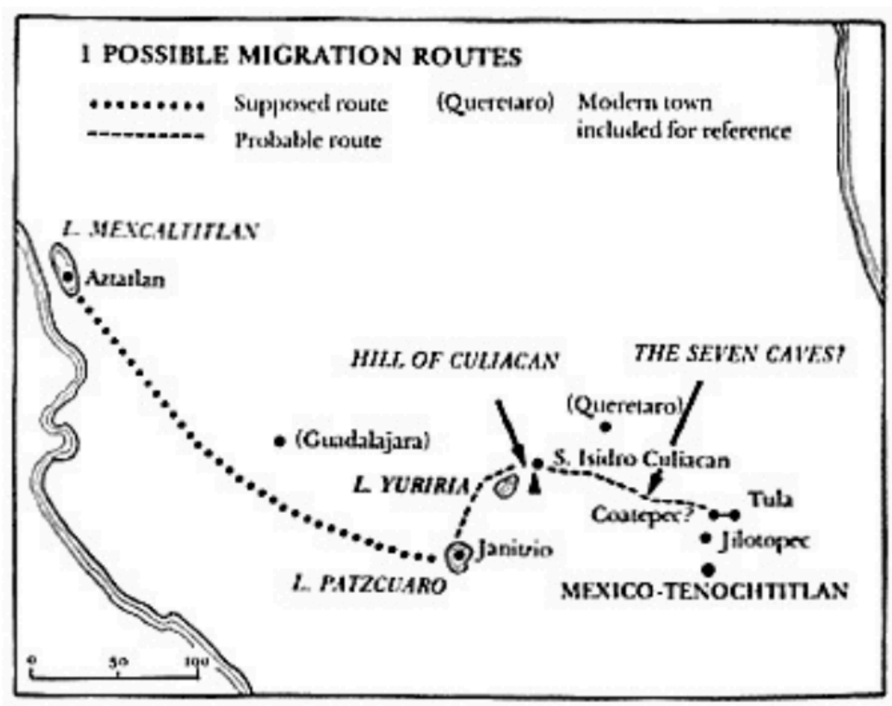

Figure 5.1: Hypothetical Aztec migration routes. Figure in Nigel Davies (1980:9). Davies includes the modern city of Querétaro for reference.

The Aztecs' very first interactions with Tula are recorded in documents and in archaeological research. According to their own migration histories, the Aztecs originated from a semi-mythical city called Aztlan (Figure 5.1). They left that city around 1111 A.D. in search of a divine signal that would indicate the location that they should found their own city (Davies 1980:8). In 1325 A.D., when they saw the sign—an eagle resting on a cactus, holding a snake in its mouth—they built their capital city of Tenochtitlan (Berdan 2014:40, Clendinnen 1991:23). Along the way, however, they stopped in various cities. According to this migration story, they arrived in Tula about one calendar cycle (52 years) after leaving Aztlan, placing them there in approximately 1163 A.D. (Chipman 1995:7, Davies 1980:8,12, see also Boone 1999:138[18]). Though the Aztecs would also make pilgrimages to another Tollan, the even more ancient city of Teotihuacan, Tula was the only Tollan that they visited during their migration. Tula was, at the time that the Aztecs began their journey south in 1111 A.D., the most important city in region north of the Basin of Mexico. Further, though we have no idea where Aztlan is (and it may well be a deliberate invention), the other cities that are recorded in their journey are real and likely well within the region of Tula's Tollan-phase influence, which extended significantly to the north and west, beyond the modern city of Querétaro (Healan 2012:53,93).

As I noted in Chapter 3, the archaeological markers of early Aztec interventions at Tula (Aztec II Black-on-Orange ceramics) are ephemeral and probably present in lower quantities than Acosta believed. Nonetheless, these ceramics are associated with destructive activities in Tula's Tollan-phase ceremonial center, known as Tula Grande. These activities included the burning of Building 3 (also known as the *Palacio Quemado*, or Burned Palace). Since Acosta's time this burning episode has been examined using radiocarbon (C14) dates, which cluster around the year 1140 A.D. (Healan 2012:96). Acosta also noted that "vast quantities" Aztec II ceramics were associated with the

[18] Boone (1999) does not present a date, but notes that Tollan assumes importance in the textual descriptions of the migration.

effacement of Pyramid B and the removal and "burial" of the Atlante warrior sculptures (1945:56, see Figure 5.3). Acosta also found evidence of several chacmool sculptures that had been "beheaded" and otherwise dismembered in antiquity (Acosta 1946-1950:84).

Other researchers have argued that it is likely that these early Aztec activities took place after the fall of Tula (Healan 2012:96-97, Sterpone 2000), based on evidence that the burning took place *after* the monumental art had been removed and the buildings had fallen into disrepair. Further, the ephemeral nature of this occupation makes it unlikely that the Aztecs "invaded" Tula as conquerors (see Chapter 3). What, then, accounts for this material pattern?

Archaeological patterns from elsewhere in Mesoamerica offer a clue. Travis Stanton and his colleagues (2008) have argued that while people all over the globe participate in material destruction related to warfare ("sacking"), this behavior was highly ritualized in the Maya region. In Mesoamerican societies, buildings could be animated through consecration rituals. These included such acts as placing important deceased persons inside the building, placing caches of special objects in strategic places in the building (Stanton et. al. 2008:236-237). In addition, as I have explained in the Aztec case, monumental stone statues were *ixtilpas* or objects that "allowed the gods to be manifest;" stone sculptures thus had significant powers and could themselves be made animate (Basset 2015:132, Clendinnen 1990, see Chapter 2). Therefore, when warfare occurred, the victors did not randomly destroy the vanquished cities; instead, they undertook specific ritualized acts in order to "undedicate" or deconsecrate them. In Stanton et. al.'s (2008:237) terms, these activities were "carefully executed so that the loser's ties to ancestral power and legitimation was dismantled by killing their living temples and houses" (Stanton et. al. 2008:237). Termination rituals usually involved rapid depositions of great quantities of intentionally broken pottery (a "terminal offering"), intensive burning, and dismantling buildings (Stanton et. al. 2008:237-238).

Deliberate, ritualized destruction practices appear to be a pan-Mesoamerican phenomenon, both in space and time. For example, Chris Pool and his colleagues at Tres Zapotes found evidence for epi-Olmec mutilation of much earlier Olmec-era (Middle Formative) stelae that depicted rulers; Stela A was a 5m tall carved stone that represented a ruler; the ruler's face had been battered in the Epi-Olmec period, cracked either deliberately or after a fall, and then "laid to rest" under thousands of pieces of obsidian (Pool and Laughlin 2014:9). Stela F, an Olmec (antiquarian object) from the same site, exhibited similar facial mutilation (Pool and Laughlin 2014:9). Further south and later in time, at Chichén Itzá, researchers found evidence of antique jade objects that had been burned and ritually crushed before being thrown into the site's *cenote* (natural limestone well) [Joyce 2003:117]. Still further south, in Costa Rica, there is evidence that early classic Maya jade pendant heirlooms were deliberately dismembered (Joyce 2003:119-120).

The question of whether early Aztec peoples actually conquered Tula is a subject that requires much further research. But what seems to be clear, based on Acosta's data and modern research, is that they did visit Tula at almost precisely the same time that the colonial histories say that they did. Their activities are associated with processes that I interpret, based on comparative research, to be associated with carefully planned termination rituals. Throughout Tula Grande, Acosta found early Aztec ceramics associated with destructive contexts, such as dismantled buildings, burning episodes, and dismembered and "hidden" monumental statues of warriors and *chacmools* (see Chapter 3). Whether or not the Aztecs actually destroyed their predecessors, it is clear that Tula—the most powerful and influential city in the northern regions from whence the Aztecs originated—had to be symbolically "killed" before the Aztecs could properly begin their rise. Importantly, these processes were political, but not merely so: they rested on a panregional religious ontology in which buildings could be imbued with supernatural power. Further, my interpretation strongly supports Elizabeth Boone's (1999) proposition, based on a close reading of all of the available documents, that the Aztec migration story is best understood as a ceremonial performance.

Clearly, the Aztecs considered the Toltecs (in the general and specific senses) to be the progenitors of "civilized" society, and their connections to the Toltecs provided half of the heritage that the Aztecs claimed (as noted in Chapter 2, the other half was "barbarism," or war-like nomadism, attributed to the Chichimecs). As a result, when the Aztecs had arrived in Tenochtitlan, the nobles and city planners sought to associate their own city with that of their predecessors, particularly by emulating the art of the Toltecs of Tula. Aztec architectural elements such as the *tzompantli* (skull rack) have origins in Tula (Cobean, Jimenez Garcia, and Mastache 2012:103). Benches with mural or relief patterns featuring warrior processions that adorn Tula's ceremonial center were copied at the Templo Mayor (Umberger 1987:74). The benches at Tenochtitlan are remarkable in that they copied the crude style, materials, and execution of the Toltec originals, despite significant advances in stone sculpture during the Aztec era (Molina Montes 1983:103). More generally, repetitions of jaguar, eagle, and feathered serpent motifs form a similar symbolic language in both cities. The reclining *chacmool* figure, which has roots in Tula, was duplicated in one of the earliest building phases of the Aztec Templo Mayor[19]. Smaller versions of Tula's iconic *atlante* warrior statues may be found in Mexico's Anthropology Museum (Umberger 1987:75). Inspiration for this art almost certainly came directly from Aztec excavations at Tula. Modern excavations near the Aztec Templo Mayor recently uncovered another *chacmool* sculpture that was most likely a Toltec original, and in keeping with the data noted earlier, headless (López Austin and López Luján 2009:401). Many consider the basic plan of Tenochtitlan's sacred precinct (including the Templo Mayor) and many other Aztec cities to be a copy of the spatial layout and spatial logic at Tula (Smith 2008:85-89, 128[20];

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[19] The *chacmool* that graces the Tlaloc half of the second phase of the Templo Mayor was placed there during the reigns of Acamapichtili, Huitilhuitl, and Chimalpopoca, just before the consolidation of the Triple Alliance.
[20] Smith considers this pattern to be more prevalent in Morelos than in the Basin of Mexico, and less so at Tenochtitlan itself.

Umberger 1987:74). Elements of the sacred space, particularly the Temple of the Eagle Warriors, with its colonnaded halls and benches, seem to be an even more direct reference to space at Tula (Molina Montes 1983:102, cf. Smith 2008).

The Mexica of Tenochtitlan were not the only society to appropriate the Toltec past at Tula. Tlaxcala, a city-state that was never conquered by the Triple Alliance and whose warriors were instrumental in aiding Cortés in the Spanish conquest, also claimed ties to the city. One of their deity sculptures was covered by a mask from Tula. Two Toltec sculptures from Tula were also discovered in the city, and they too reproduced *chacmool* figures (Umberger 1987:75). Tenochititlan's formal rival and later ally, Tlaltelolco, also looted a statue of the god Tlacahuepan from Tula, according to written sources (Umberger 1987:75). Umberger notes that there is "no mention of similar practices in other towns, like Culhuacan, during the period intermediate the Toltecs and Mexica" (Umberger 1987:75). As I mention below, the Toltec dynasty from Tula apparently perservered in Culhuacan, and thus it would be logical that they incorporate Toltec symbols—but they did not. Instead it was the Aztec people and their ethnically-affiliated (Mexica) rivals in Tlaxcala who appropriated these symbols.

The Aztecs also associated themselves with Tula by using a distinctive blue diamond/dot pattern for royal capes that was associated with the Toltec emperors (Figure 5.2)[21]. The privilege of wearing the royal, Toltec-inspired regalia was only afforded to the rulers of independent cities (Aguilera 1997:6). Patricia Anawalt notes that in the *Codex Mendoza*, an extensive document of pre-Hispanic life, the first Aztec king to wear this particular cloth was Izcoatl, who reigned at the time of the formation of the Aztec empire (Anawalt 1990:297). It bears mentioning that Izcoatl was the illegitimate son of Acamapichtli, the first Mexica king, who had been "recruited" from the Toltec nobility to

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21 There is some debate about the precise nature of this royal garment; it has been argued that the garment was in fact a matrix of knotted thread inlaid with turquoise stones (Aguilera 1997), rather than a simpler tie-dyed cotton garment as Anawalt (1990) suggests. Nonetheless, all sources agree that a similar cape worn by Toltec nobility inspired the royal garment.

form the fledgling dynasty in the Aztec capital at Tenochtitlan. Even more tellingly, tribute records show that the cloth for these royal garments came as tribute from regions that coincided with two pre-Aztec kingdoms (13^{th}-century Acolhua and 14^{th}-century Tepanec) that claimed direct descent from the Toltec lineages (Anawalt 1990:294).

The cloth was just one more way of effecting material claims of direct descent and therefore legitimacy. Linear histories that recorded dynastic lines were another way of proving connections to the Toltecs. Marriage alliances for the Aztecs (as for their royal contemporaries in Europe) were an important method for cementing ties with cities that had been recently incorporated into the empire. Marriage also served to form both real—that is, biological—ties to the Toltec empire, as well as manufactured ties that strengthened the legitimacy of their imperial ambitions and connected them to a mythical past (Gillespie 1989). The first Mexica king of Tenochtitlan, Acamapachtli, was "recruited" from the Toltec dynastic line that had survived in the city-state of Culhuacan (Chipman 2005:40); his incestuous marriage was engineered to maintain exclusively Toltec blood in the Aztec nobility (Gillespie 1989). Several subsequent emperors married Toltec princesses from the city of Tula (Chipman 2005:40, 82). The dynastic line in Tula was reinstated after the consolidation of the Aztec empire: members of the dynasty in Tenochtitlan were sent to Tula to rule there (Chipman 2005:82, Gillespie 1989:194). Significantly, this meant that it was not enough for the kings to marry women who had come from dynasties stretching far back into the past; the lineage also had to be linked geographically to women who had been raised in the city itself.

Thus began the next chapter of Tula's life as a Mesoamerican city. I have argued that early Aztec (associated with Aztec II ceramics) interventions in Tula were designed to collect antiquities and, more importantly, ritually "terminate" the city so that the Aztecs could rise, but that the Aztecs continued to use Tula's cultural heritage and its objects as sources of power. After the formation of the Triple Alliance the Aztecs were so powerful that their influence extended all over central Mexico. They thus had the opportunity to begin a new chapter of the dynastic line, which could now be reinstated at its original source: Tula.

In Chapter 3 I mentioned several constructions related to late-Aztec activities in Tula Grande. In the 1992-1993 excavations at Structure K, the INAH team uncovered a Tesoro-phase (early colonial) residential building. This building had been rebuilt or remodeled several times; there was also evidence of a Tesoro-phase (Aztec III/IV) structure beneath it (Figueroa Silva 1994:12-23). Javier Figueroa Silva (1994:13) surmised that it had served as a domestic residence as well as a textile workshop, based on the quantities of spindle whorls and needles. The structure had 50-cm-wide walls constructed with stones that had likely been quarried from Toltec buildings—in all probability, from the walls and nucleus of Structure K itself (Figueroa Silva 1994:13). Another Aztec structure, described as a platform that rose 1.1 meters above the Toltec floor, was encountered during Acosta's excavations (Acosta 1946-50:95). This was also associated with Aztec III and IV ceramics (Tesoro-phase), as well as fascinating artifacts such as a *maqueta* (scale model in clay) of an Aztec temple (see Figure 3.10 in Chapter 3), and an Aztec-era *cuauhxicalli*—a receptacle for sacrificial human hearts. Another Aztec structure covered half of Hall 2 in the Palacio Quemado, which had floor and wall foundations (Acosta 1957:146; see Acosta 153-54:168). Importantly, the above-mentioned Aztec-era constructions took place in Toltec buildings that are thought to have had civic functions, for example, as meeting places for rulers and other elites (Healan 2012:101).

A final construction, a small altar that was added in the late Aztec period to Pyramid C after its destruction, provides significant clues regarding Aztec-era interventions at the site. The pyramid, which served as a temple in the Toltec era (Cobean et. al. 2012:64), appears to have been very important to the Aztecs. In addition to the small altar, they left various offerings of precious artifacts in the rubble of the building (Acosta 1946-50, 1957). On top of the altar attached to this building, Acosta found what he interpreted to be evidence of an Aztec New Fire ceremony: great quantities of intentionally broken vessels, braziers in particular (Acosta 1946-50:107-112). He also found a head that had once belonged to a chacmool figure (Acosta 1946-50:107-112).

The New Fire Ceremony was a ritual of renewal that was celebrated every fifty-two years, when the secular and ritual calendars coincided (Elson and Smith 2001:157). Aztecs believed that the world would end at the culmination of a 52-year cycle, and the ceremony celebrated the renewal of the world (Elson and Smith 2001:58). As Inga Clendinnen has suggested, however, the start of a new cycle was not guaranteed: it depended upon correctly applied human action to ensure the perpetuation of the world (Clendinnen 1991:236). Many Mesoamerican scholars note this ceremony's role in reinforcing the cyclical nature of Aztec conceptions of time, but Elson and Smith (2001:158) and Elizabeth Boone (2000b:223) have also emphasized the importance of calendar for *linear* time. Pictorial manuscripts listed events according to year glyphs, and were critical in tracking the histories of cities and dynasties. Finally, and importantly for this interpretation, New Fire Ceremonies are associated with the founding of new polities (Boone 2000b, Elson and Smith 2008:170, Fash et al. 2009).

Though we do not have extremely detailed information regarding this ceremony or its contexts in Tula, Acosta's descriptions fit with many of Elson and Smith's (2001:159) criteria for expectations of a New Fire ceremony: they were vast quantities of objects (primarily braziers, but also incense burners, pulque cups, censers, and mortars) that appeared to him to have been intentionally broken. They were reconstructable; tellingly, some of the broken vessels could be fitted with broken pieces from Aztec-era offerings in Pyramid C (Acosta 1946-50:114). Further, judging from Acosta's descriptions, the pieces appeared to belong to a single deposit (Acosta 1946-50:114). The New Fire Ceremony was performed at all levels of society, from elites to commoner households (Elson and Smith 2001:158-159). Given the context of this particular ritual in the ceremonial center of a city that was revered by the Aztecs, we would expect that the broken objects would be more likely to pertain to elite culture and ritual practice. Further, braziers are used to hold fire; a ritual object and a crucial part of the ceremony (also see Chapters 2 and 6). This may explain the high quantities of braziers, censers, and incense burners in the deposit.

The presence of the head of the chacmool head in this deposit is also important. Many of the chacmools excavated by Acosta were found without heads (Acosta 1956b). The presence of one of the heads in a New Fire deposit is therefore very important. It is quite possible that in addition to being used as relics of the past and inspiration for art at Tenochtitlan, the head of the Toltec sculpture served as part a ritual that enacted the renewal of time and the commemoration of history. The ceramic artifacts associated with this event, according to Acosta, were Aztec III (Tesoro-phase) ceramics.

Late-Aztec ceramics are also associated with what I interpret to be the "reanimation" or consecration of Pyramid C. Along with a new Aztec-era altar at the pyramid, the consecration consisted of at least three caches of offerings on the northern face of the building, and two on its southern slope (Acosta 1946-1950:49, Acosta 1956:84-86, Acosta 1957:145). As noted, parts of the ceramics associated with these offerings could be fitted with ceramics the New Fire Ceremony deposit; they are therefore best associated with the Late-Aztec occupation. These included previous obsidian knives, braziers, figurines, hundreds of jade beads, and a stone sculpture depicting a human face emerging from the body of a serpent (Acosta 1946-1950:49). From this description I interpret a direct reference to Tollan-phase monumental sculpture: its *coatlipantli* or serpent wall featured the same theme. Stanton et. al. (2008:235-236) see the caching behavior associated with new constructions as reflecting animation rituals in the Maya region. Caches of precious objects were used during the commemoration of many buildings in Mesoamerica, including the Templo Mayor at Tenochtitlan (López Austin and López Luján 2009).

Making Sense of the Evidence

What is to be made of this evidence? First, excavations reveal a presence of Aztec II ceramics that is limited to Tula's ceremonial center, and that is carbon-dated to A.D 1150-1200. This is also quite close to the dates and migration sequences given for an early Aztec interaction with Tula gleaned from the historical record (Boone 1999, Davies 1980:7-). However, Healan (2011:97) and Sterpone (2000) raise the fascinating possibility that a burning event happened *after* Tula's ceremonial center had been abandoned. Regardless of whether Tula's collapse occurred because of extreme drought (Healan 2012:96), interregional warfare, or some other reason, there is definite archaeological evidence of a short-lived Aztec II occupation at the city that accords with some historical documents.

Second, during their reoccupation of Tula the Aztecs were reanimating the city that they had ritually "killed": at the time of the Aztec reoccupation of Tula, the Toltec city had been abandoned for several centuries. This time lapse underscores the ceremonial, religious, and political nature of the Aztec "revival" of the ancient city—to occupy a city in ruins was a calculated action that further cemented the ties between the two civilizations. It is also important to note that the greater the Aztec cultural and geographical expansion became, the more it became necessary for the empire to assure itself and its subjects of its legitimacy. The reoccupation was a way for the Aztecs to locate their own history on the landscape, adding to the embellished biological and symbolic ties to the Toltecs.

All of the archaeological evidence—the New Fire Ceremony, the altar, the "reanimating" offerings—indicate that the Aztecs were ready to begin to use Pyramid C once again. That Tula was "reborn" at around the same time as these later rituals took place is supported by a wealth of material evidence, including evidence from my own project. As noted in Chapter 4, we found evidence of late Aztec occupations and modifications in nearly every excavation unit at both sites. The overwhelming majority of ceramics from my two sites combined was late Aztec; Aztec II ceramics make up only 1.33% of the most conservative sample (see Table 5.1). These findings are consistent with previous research that shows that early Aztec pottery is rarely found outside of the Toltec city center (Cobean and Mastache 1989:45). Instead, excavations have revealed that the Aztec reoccupation of Tula was concurrent with the expansion of the Aztec empire (Healan 2012, Healan, Cobean, and Diehl 1989:247, Mastache, Cobean, and Healan 2002:42). I have tried here to show that these late-Aztec activities do not represent the simple consequence of northward expansion during a population boom (see Smith 2008: 78 for general information about this trend). The combined lines of evidence indicate a sustained interest in Tula, which ultimately culminated in reoccupying and re-using many of the Tollan-phase buildings. Furthermore, my project did not find any evidence of an Aztec-era altar or temple underneath the Open Chapel at Tula; so far, Tula Grande itself remains the only certain locus of state-level Aztec ritual activity in Tula.

	Diagnostic Aztec Sherds	
Diagnostic Sherds	**Count**	**Proportion**
B/O II	8	1.33%
B/O III	465	77.50%
B/O IV	127	21.17%
Grand Total	**600**	**100.00%**

Table 5.1: Proportions of diagnostic Aztec-era Black-on-Orange ceramics from the Open Chapel and Cathedral sites. The table is conservative because it does not include ceramics that were unidentifiable within the Aztec Black-on-Orange type or miscellaneous sherds (such as supports).

Finally, the elite Aztec need to form material, rather than simply narrative connections with the Toltecs, illustrates the fragility of the power of the Tollan narrative itself. There were many competing claims to the past, illustrated by episodes of pre-Columbian book-burning and the race to collect objects from Tula and wear royal cloth in imitation of its original rulers, as well as the installation of a new branch of Toltec nobility in the city. That the Toltec connection had to be reiterated in so many different forms (through ritual in Tula, imitations at Tenochtitlan, dynastic ties, and in the histories) is proof of the fact that Tula was a "nervous landscape." The power that it held was not absolute: Tula and the other Tollans belonged more properly to Mesoamerica as a whole, and other peoples (such as the Tlaxcallans) could also claim that past. The final reoccupation of Tula, then, was a historiographical checkmate that further reinforced the Aztec version of the narrative—and had lasting effects in the colonial period.

Figure 5.2 Nezahualpilli, ruler of Texcoco, wearing the royal blue cloak. ("Nezahualpilli" 2015)

Figure 5.3 Photograph of Acosta's early excavations, showing evidence of early Aztec-era interventions in Tula's ceremonial center, such as this beheading and "burial" of a Toltec-era Atlante sculpture. ("Atlante" 2015.)

5.6 THE TOLTECS IN THE COLONIAL ERA

The Spanish conquest of central Mexico in 1521 radically altered (but did not completely destroy) existing Aztec dominance. A brand new field of power was in place, and while the Spanish elite placed themselves at the top of the hierarchy, its suborders were open to negotiation. Perhaps more importantly, the Spanish were few in number and found themselves having to administer (in both a religious and political sense) an enormous and densely populated territory. This was possible only through the appropriation of existing Indigenous power structures (Gibson 1964).

The "black legend" regarding Spain paints a narrative that presupposes the complete destruction of indigenous lifeways (Restall 2003b). Without a doubt, Spanish colonialism was violent and had devastating consequences for Indigenous peoples. But it is also important to remember that the Spanish system, particularly in the earliest years of the colony, was entirely dependent upon the systems that had been established centuries (even millennia) earlier. The Spanish conquest as told by the conquistadors (Cortés 1986, Diaz 1963) reveals the deep dependency of these conquering men on the populations that they strove to conquer (Restall 2003b). The conquest would have been impossible without the aid of Cortés' Tlaxcalan allies and the key Indigenous translator, Marina (Townsend 2006). Likewise, the subsequent administration of the empire was possible in part because many of the existing pre-Columbian political structures were left intact (Gibson 1964). Spanish colonization, then, was also a "nervous system"—it required careful negotiations with powerful members of the Indigenous elite, especially the Aztec nobility that had survived the conquest (Chipman 2005).

Colonial-era Tula offers one important case study of these fragile colonial encounters. Shortly after the conquest, Tula was granted in *encomienda* to Pedro Moctezuma, the son of the Moctezuma II, who had reigned over most of central Mexico at the time of the conquest (Chipman 2015:82). *Encomienda* was a lucrative but often brutal Spanish system in which a colonial authority would receive labor tribute from all of the lands under his or her control. The majority of colonial *encomiendas* were distributed to men who had aided Cortés during the conquest; grants to Indigenous subjects were rare. However, three of the "legitimate heirs" of Moctezuma II, all Aztec royalty, received *encomienda* grants (Chipman 2005). Tula was given to Pedro Moctezuma because his mother, a Toltec princess, had claims to the land (Chipman 2015:82).

Indigenous leaders in Tula, however, successfully contested Pedro Moctezuma's authority on the grounds that his mother was illegitimate, and therefore neither she nor her son had the right to govern Tula (Chipman 2015:84). Pedro proved unable to defend himself against the Indigenous leaders and instead turned toward the traditions of the conquerors: he was an early convert to Catholicism, a "deputy emperor" to Cortés, and traveled to Spain to personally visit Carlos V, who granted him a coat of arms, a noble title, and ordered the restoration of his estate (Chipman 2005:85). This decision was battled within the courts of New Spain for several decades afterward, but in the end Pedro and his heirs maintained control of the region despite nearly constant lawsuits (Chipman 2005: 82-89). Pedro's shrewd method of appealing to all of the available claims of legitimacy—his Toltec dynastic connections and his quick adaption to Spanish legal, religious, and royal customs—eventually triumphed over local Indigenous and Spanish opposition to his authority. He was so successful, in fact, that some of his seventeenth-century heirs lived permanently in Spain as nobles, living off of the profits of their New World *encomienda,* and one even became the wife of the viceroy of New Spain (Chipman 2005:147).

At the same time that Pedro Moctezuma and his family were battling over their prized *encomienda* in the courts of New Spain, Spanish friars arrived in Tula to begin the conversion of the Indigenous subjects of the region.

Many pre-Columbian temples were destroyed in the first waves of the Spanish conversion program, including the Templo Mayor at Tenochtitlan and the largest pre-Columbian temple in Mesoamerica, the temple of Queztalcoatl in Cholula. The Toltec ceremonial center, however, remained intact throughout the colonial period, despite what I have shown to be its clear religious significance to the Aztecs. Whether this was a result of Spanish friars' ties to Pedro Moctezuma and his family (all very early converts—Chipman 2005:84), or because the city was already considered a ruin and therefore not worth destruction, the Spanish priests declined to interfere with the Toltec center when they arrived around 1530 A.D. They instead installed a modest open chapel in the heart of the more inhabited region to the southeast of Tula Grande (Figure 4.1 in Chapter 4).

The chapel that was constructed in Tula consisted of three towering walls that opened widely toward a plaza to the west of the building (Figure 5.4). Its interior was originally covered with a design of white and red circles and squares, traces of which have withstood five centuries of weathering. Abutting the structure to the south was a set of stairs leading to a small sacristy. Amongst the stones used to construct the building, one can note an occasional decorative stone that was unmistakably quarried from the nearby Toltec ceremonial center (Vázquez Cibrián 2013:178).

Figure 5.4 Tula's Open Chapel, facing east. Photograph by the author.

Previous research has revealed that open chapels represent a collaboration between Spanish and Indigenous understandings of ritual space (see Chapter 6). Their open form is designed to convert plazas into an outdoor ritual space—a format that was familiar to all Mesoamericans. Indeed, the postconquest plaza formation is likely a direct and deliberate replication of preconquest notions of the universe (Edgerton 2001:58). Further, early Catholic religious structures employed experienced Indigenous artisans for their construction (Kubler 2012, also see Chapter 6). These laborers' integration of pre-Columbian building materials from sacred precincts, as happened at Tula's Open Chapel (Vázquez Cibrián 2013:178) thus likely had a different semantic value for the Spanish and Indigenous inhabitants of Tula. For the Spanish, the materials likely symbolized the dominance of the Church and its god; for Indigenous subjects, they may have symbolized the reiteration of existing forms within the new religious system (Edgerton 2001:47).

In 1550 the friars abandoned the small Open Chapel and built a large, fortress-like monastery complex (the modern Cathedral of San José) approximately a kilometer away to the south, thereby establishing a new city center even further away from Tula Grande. My excavations revealed that this structure was built on a large Toltec-era platform (Chapter 4 and Chapter 6). However, it was even further removed farther from the Aztec-era center of worship. Whether out of ignorance, indifference, or the influence of the Moctezumas, the Spanish never dismantled the Tollan-phase core of Tula. However, we do know that people continued to live in the buildings in Tula Grande: colonial ceramics encountered in the Toltec ceremonial center indicate its continued colonial use and colonial knowledge of the Toltec center (see Figueroa Silva 1994, Iverson 2009, and Chapter 7).

5.7 CONCLUSIONS

The "single Tollan" view has led scholars to claim that Aztec accounts of Tollan (as Tula) were "either wrong or greatly exaggerated. It would be absurd today to consider the Toltecs as the inventors of the calendar and the various Mesoamerican arts and crafts, since we know today that these traits originated several millennia before the Toltecs" (Smith 2008:85, see also Davies 1977:44-45). Archaeologists and ethnohistorians alike have long noted that Tula does not match the grandeur that the Aztecs ascribed to it, at least according to the Single Tollan view. On the other hand, the "many Tollans" view fails to accommodate the apparent "termination rituals" that Acosta documented in Tula's ceremonial center (Acosta 1940-1961), the Aztec dynastic ties to the Toltec line [Chipman 2005, Gillespie 1989], and the many imitations of Tula's city plan and monumental art at Tenochtitlan and other Aztec cities (Smith 2008, Molina Montes 1983, Umberger 1987, Smith 2008).

In this chapter I have supported a "many Tollans" perspective that supports the idea of an early Postlassic elite interactive sphere (Kowalski and Kristin Graham, eds, 2007, López Austin and López Lujan 2000). But I have also argued that this view is not mutually exclusive with the idea of a single Tollan based in Tula. I share this position with several scholars (e.g. Carrasco 1982:72-73, Davies 1977:43)—including, in a limited way, Susan Gillespie[22] (2007:112), who argued that the "single Tollan" theory is essentially an archaeological myth. She posited that the "single Tollan" emphasis was a colonial fiction engineered in support of land claims and the exigencies of colonial administrators (Gillespie 2007:112). However, I have argued here that the "single Tollan" phenomenon was an Aztec attempt to localize a great history to a known point on the landscape, to better be able to claim it as their own. As a result, Tula (as the single Tollan) became a synechdoche for a macroregional phenomenon, the Zayuá system (see Chapter 2). Tula had several advantages in this regard: it was an important city within the Zayuá system; it was close both geographically and in time (thus allowing its dynasty to persist); it was not in enemy territory (as was Cholula), it formed a part of Aztec migration history, and the Aztecs likely originated from a region that was directly within Tollan-phase Tula's sphere of influence. The Moctezuma family's claims to the Tula region, and their incredible

[22] Gillespie's (2007) chapter is a very detailed and important accounting of Western historiography's methods of "fixing" Tollan on the Mesoamerican landscape. I refer readers to the original chapter, whose arguments I cannot reasonably fully engage here.

ascendance in Spain, depended as much on material, flesh-and-blood ties to the landscape as they did on documents. In this sense, the histories created around Tula enabled the colonial land claims, rather than the reverse (*contra* Gillespie 2007).

In this chapter I have argued that Aztec interventions at Tula bear the marks of an elaborate "termination ritual" (Stanton et. al 2008) in which commemoration entailed both destructive and constructive activities. The "caching" of the Atlantes, the beheading of the chacmools, the evidence of the New Fire Ceremony, and the offerings and altars in Tula's ceremonial center were previously interpreted as an Aztec invasion (Acosta 1940:187, 1944:155, 1956-57:75) that is becoming increasingly doubtful (Healan 2012, Sterpone 2000). I have argued that early Aztec activities (documented in ethnohistory and archaeologically) were meant to ritually terminate the great city; Acosta associated these ceramics with Atlante "burial" contexts (Acosta 1945:46; but as I note in Chapter 3, Acosta probably overestimated the quantity of Aztec II sherds at Tula). Meanwhile, the New Fire ceremony (associated with Aztec III vessels, Acosta 1956:114) may have been a commemoration of the beginning of a new phase in Tula's history, one that featured the re-installation of the Toltec-derived Tenochtitlan dynasty in its proper place. As I note in Chapter 2, ritual and politics were completely intertwined for Mesoamericans. Early and late Aztec activities in Tula were related to religio-political legitimacy and a commemoration of both history and the Gods, judging by the locations and descriptions of the interventions (new buildings inside Buildings K and the Palacio Quemado; a new altar, offerings, and the New Fire Ceremony at Pyramid C). The extent to which Spanish friars understood these connotations is unclear, but ultimately they did not interfere with Tula Grande. This time, the pyramids would not be "killed," ritually or otherwise.

More broadly, this case brings into question the productivity of dividing memory from history. Does the Aztec story about the Toltecs—a story that bears all of the marks of a state-sponsored, official history—become memory after the Spanish conquest? Did the various claims of competing city-states to the history of Toltecs become memory after the formation of the Aztec Empire? That is, does elite history become memory once it is no longer the dominant narrative? I argue that both memory and history are operating in the prehispanic Aztec context as well as the colonial context. Rather than separating memory and history, it seems more productive in this case to recognize that the historical gaze in all cases involves appropriation, negotiation, power, silences, and the competing claims of various factions with different claims to the past. Concentrating on the effects, particularly the material effects, of historical production reveals that Spanish and colonial histories were unstable systems that required constant affirmation as well as concretization. I have tried to argue here that the Aztec appropriation of the Toltec past required a means to fix that past on the landscape: Tula was used as a synecdoche for the broader (likely pan-Mesoamerican) Toltec past. That practice rendered it visible to elites and competing factions alike; major commemoration rituals such as the New Fire Ceremony in Tula Grande would likely have been publicly visible, just as the New Fire Ceremony was a public and widely attended event in other parts of the Aztec Empire (Elson and Smith 2001). Later, the Spanish built their own system on top of already-existing Indigenous political systems and physical landscapes (Gibson 1964), which required some accommodation of competing Indigenous claims to legitimacy and to the past (Chipman 2005).

The "past of the past" is not simply an illustration of elite power, but can productively illuminate the ways that elite historiography is shaped by the need for legitimacy. Legitimacy must be constantly reaffirmed in order to maintain the narrative: the overwrought nature of the Aztec emphasis on the Toltecs speaks to the fragility of structures of legitimacy and points to competing narratives in the past. Even if we have little direct knowledge of alternative narratives (the Toltec artifacts in Tlaxcala, for example), the very repetition of Aztec claims to the Toltec past is evidence of the instability of historical practice. That the highest courts in Spain acceded to the Moctezumas' claims, and that the Spanish friars ignored or were ignorant of Tula Grande's important religious connotations, also indicates the instability and penetrability of Spanish colonial systems.

CHAPTER 6: RITUAL PRACTICE IN COLONIAL TULA

6.1 INTRODUCTION: PRACTICE AND MATERIALITY

In the previous chapter, I discussed two major pre-Columbian rituals that took place at Tula Grande. I also briefly discussed the colonial-era consequences of those religio-political activities. In this chapter, I focus specifically on the colonial-era ritual world that I introduced in Chapters 1 and 2.

As I explained in those chapters, the goal of the conversion campaigns was to indoctrinate Indigenous subjects to the institutional form of Christianity. Religious ritual was the primary vehicle for conversion and indoctrination. In early colonial Mexico, as elsewhere, indoctrination happened through the sacraments, which marked significant stages of the lifecycle. Indoctrination could also occur within the monthly celebrations and daily and weekly masses. The monastics were trained in a tradition of religious philosophy that recognized how ritual works: they knew that "action can shape the actor" long before modern social theorists began to understand the same phenomenon (Hanks 2010:95, see also Bourdieu 1977, Mahmood 2005:31). That is, ritual's power lies in its ability to work on the mind and the body to inculcate religious sentiment. For example, Saba Mahmood explores the ways that Islamic women use practices of veiling to gradually create feelings of piety within themselves, rather than wearing veils as a reflection of their preexisting piety (Mahmood 2005).

But as a practice, ritual's power also runs in the opposite direction. That is, as individuals and communities participate in rituals, the meanings and prescribed actions gradually change. I understand this process as similar to the process of resignification that I described in Chapter 1. Because ritual must, by necessity, foster a sense of community while simultaneously allowing for individual autonomy (Bell 2009:222), rituals produce heterogeneous effects in individuals and social structures. What counts as "appropriate" ritual therefore shifts in different contexts and over time as meanings and actions are collectively determined. As a result, ritual is a particularly poor tool for hegemony: "ritualization as any form of social control, however indirectly defined, will be effective only when this control can afford to be rather loose" (Bell 2009:222).

A colonial example of these processes comes from the friars' administration of the sacraments in the early colonial era. Friars focused particularly on baptisms, which provided the "safeguard" of Christian protection (Cervantes 1994, Pardo 2006:29). However, the necessity of administering baptism to so many people meant that friars often performed mass baptisms that varied widely from ceremony to ceremony and from individual to individual. For example, the friars were much more careful to bathe children in holy water, while adults received a more abridged (often without water) form of the sacrament (Pardo 2006). The friars' particular concentration on children echoed a pre-Columbian Nahua Indigenous tradition of a post-birth practice in which infants were ritually washed (Pardo 2006:30, Durán 1971). Nobles, however, received a more thorough version of the rite. The ecclesiastical historian Motolinía described the baptism of a "son of Moctezuma" (presumably Pedro Moctezuma[23]) in detail. Pedro was ill and had requested baptism, and had to be removed from his house and exorcized until he began to shake, which Motolinía understood as evidence of a demon leaving the noble's body (Pardo 2006:23). The sacrament of the Eucharist, in which congregants ate unleavened bread and drinking wine that was the material body and blood of Christ, had an uncanny echo in pre-Columbian practices of eating amaranth *ixtilpas* of the gods—a practice that friars struggled to make sense of (see Chapter 2, Durán 1971).

In the colonial religious encounter, preexisting practices and their associated meanings became incorporated with one another in various ways. Christianized Nahuas projected Christian meanings backward onto their own pre-Columbian practices, as was

[23] Pedro Moctezuma was the only male heir of Moctezuma II recognized by Spanish colonial authorities (Chipman 2005).

the case in the Marian cult, which associated the Virgin of Guadalupe with Ixpuchtli, a young female goddess (Burkhart 1990:208). Louise Burkhart cautions that in worshipping Guadalupe colonial Nahuas were not "continuing" their old religious practice, but rather imbuing their past religious practice with new meanings derived from Christianity (Burkhart 1990:208).

Concomitantly, the friars also imposed their own meanings on the pre-Columbian past. They sometimes understood the analogous practices (such as the ritual bathing of infants and the eating of the gods) as evidence that the Christian god was already known in the New World. But it was equally probable (in their understanding) that these practices were the tricky work of the devil (Durán 1971). Despite their fears of idolatry, however, many friars drew on these autochthonous rituals to make Christian practice understandable (Pardo 2006), or reinterpreted them in such a fashion that they became acceptable marks of "true faith" (Burkhart 1998).

These processes were at work during Christian festivals and plays. As Louise Burkhart has noted, serious sermons got the friars nowhere with the colonial Nahuas, but "if they set the catechism to music and invited the natives to sing and dance, or to put on a Christmas pageant with native actors in costume, suddenly the churchyard could not accommodate the crowd" (Burkhart 1998:362-363). Pageantry, music, performance, art, and theater were all integral aspects of Aztec state religions. While the pre-Columbian precedents did not carry over directly, the Indigenous religious ontologies that informed these preferences had an enormous influence on the shape of Christianity in the New World (see also Clendinnen 1990, Córdova Tello 1992:82, Durán 1971, Edgerton 2001).

How did material culture relate to these practices? In this chapter, I discuss aspects of the material culture of ritual at Tula's Open Chapel and Cathedral, which relate quite directly to Nahua Christian ceremonialism. I first present colonial evidence compiled by the historian Victor Ballesteros García that indicates that friars in Tula continued to learn Indigenous languages well into the colonial era. I then discuss the religious buildings in terms of popular tropes of spiritual warfare. I reveal that building practices (such as building orientations) were multivalent and that these independently developed meanings often overlapped. I also point out that the material culture from both sites shows the great importance of outdoor worship and public celebration that has been emphasized by ethnohistorians. In another section, I discuss evolving death rituals in Tula, and how these changed from the Aztec era to the Open Chapel period and again during the Cathedral period. Finally, I discuss some of the ritual objects that my project encountered at the two sites.

6.2 HISTORICAL BACKGROUND: TULA'S FRIARS AND THE IMPORTANCE OF LANGUAGE

In order to contextualize the material culture at the Open Chapel and the Cathedral, I present a brief history of Tula[24], which is indebted to the Hidalguan historian Victor Ballesteros García (2003). Because this information is not available in English and is furthermore very relevant to the archaeological sites that I excavated, I reproduce it in some detail in what follows.

Friar Alonso Rengel (or Rangel) was the first mendicant to arrive in Tula. He came to New Spain in 1529, and was charged with constructing the first Christian religious building in Tula: the *Capilla Abierta* or Open Chapel (Ballesteros García 2003). Today this building is located within the boundaries of Tula's archaeological zone, to the southeast of the Toltec ceremonial center (Figure 4.3, Chapter 4).

Like many of the earliest mendicants, Rengel was linguistically gifted. He compiled grammars of Nahuatl and Otomí. Though Tula was governed by Nahuatl-speaking members of the Tenochtitlan dynasty (including Pedro Moctezuma and his mother), the majority of the Indigenous inhabitants in Tula were probably Otomí speakers. Today, the region is still dominated by Otomí speakers when Spanish is not the primary language (Figure 6.1).

[24] Much of the material that Ballestros García gathered for this history depends on two sources: *Monarquia Indiana*, by Fray Juan de Torquemada (1557-1664), and *Historia Eclesiástica Indiana*, by Fray Gerónimo de Mendieta (1525-1604).

Friar Juan de Alameda arrived with the future bishop of Mexico, Juan de Zumárraga, in 1528. He became the religious leader of Tula in 1539. Though he is said to have urbanized both Tula and Huejotzingo, where he had worked previously, this is not probable according to Ballesteros García (2003:128) and George Kubler (2012:167)[25]. Alameda died in 1570, having transferred to Huaquechula and constructed a church in that city (Kubler 2012:167).

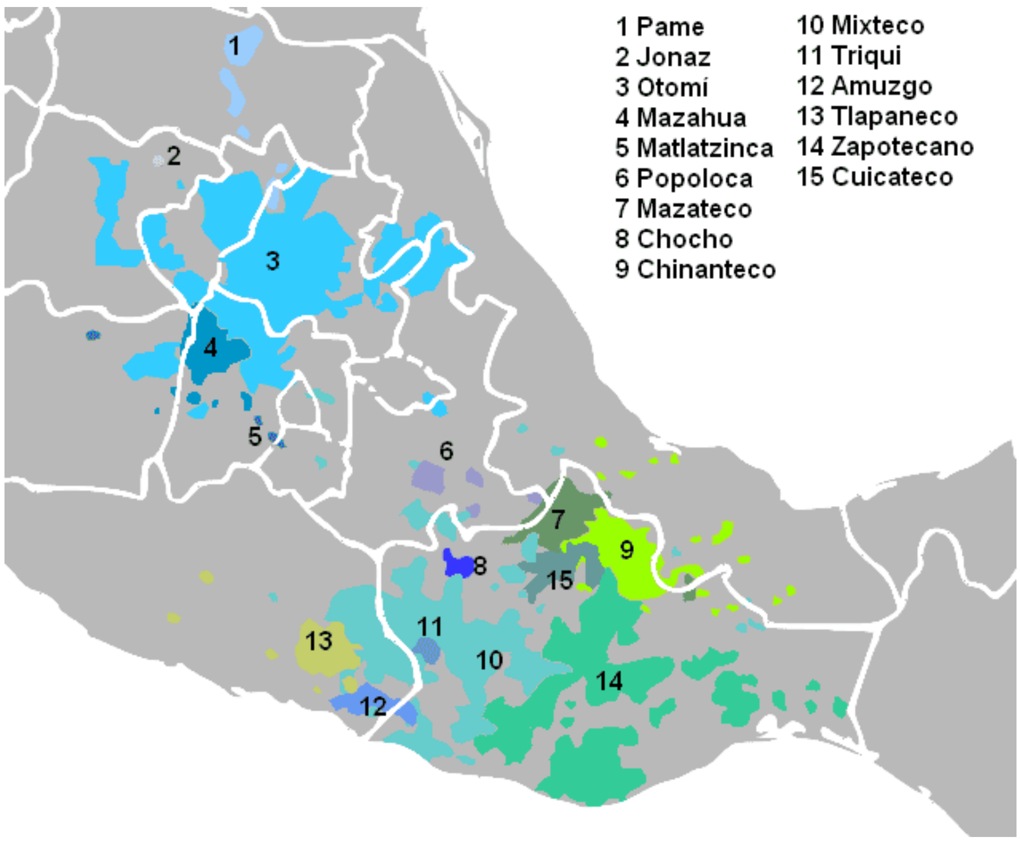

Figure 6.1 The Otomí languages, Number 3, bright blue ("The Otomí languages," 2010)

[25] Kubler (2012:167) notes that while construction activities began in Huejotzingo in 1529, the modern town of the plan is not Alameda's work. It is unclear, even after my excavations, how "urban" Tula was at this time.

Fray Antonio de San Juan succeeded Alameda, arriving in Tula in 1543. In 1550 he received instructions from Fray Toribio Motolinía, the regional *provincial* at the time, to construct a monastery, which is the complex that serves today as the diocese of Tula. The building was finished in 1554. San Juan served as the guardian of Tula for three consecutive terms. He spoke some Nahuatl, but there is no mention of his skill with Otomí (Ballesteros García 2003:128). The final friar that Ballesteros García (2003:128) highlights is Fray Alonso Urbano, who compiled an *arte* of the Otomí language as well as a trilingual Spanish-Otomí-Nahuatl grammar.

Another window into the friars' lives and religious ideas is provided through the study of four library inventories (Ballestros García 2003:129-130)[26]. The first two, from 1668 and 1686 contain 251 volumes, including:

- Books by Virgil, Cicero, and Aristotle
- A Vatablo (Vatable) *Bible*, with Vatable's commentary and notes
- *Espejo de Casado* (by the Augustinian Fray Alonso de la Veracruz)
- *Doctrina Cristiana* by the Franciscan Fray Juan de Zumárraga
- *Sermones* by the mystic Spanish Dominican Fray Luis de Granada
- *Racional de los divinos oficios*, by the 13th-century French liturgist Guillaume Durand (Guillermo de Durandus)- influential in liturgy, architecture, and religious art[27]
- Two grammars of Nahuatl and one of Otomí

[26] Ballesteros García notes that the inventories are held in the Fondo Franciscano, a collection in Mexico's National Library, which is under the purview of UNAM (Ballesteros García 2003:129).

[27] See Durandus 1907. This document, a translation of Book 1 of the *Racional*, written in the thirteenth century by the Bishop of Mende (France), is an incredibly detailed description of—and justification of—symbolism in Church architecture and religious imagery.

Figure 6.2: Guillermo de Durandus, 1237-1296. (University of Mannheim 2015)

From the brief sketch outlined above, it is quite clear that linguistic skills in Indigenous languages were of primary importance in Tula, as indicated by the short biographies of Tula's friars and the inventories of the library at the Cathedral of San José. Though I have not gone on to list the contents of another, later inventory (from 1753), it does show that concerns with learning and teaching in indigenous languages continued.[28] One of the new volumes in this inventory is a confessional in Nahuatl; Greek and Hebrew grammars also appear (Ballestros García 2003:130). Since Spanish is so widely spoken throughout Mexico, it is natural to assume that colonial process brought the change. However, widespread Spanish language acquisition may be due to the same modernization practices that began with the advent of free primary schools after the Bourbon reforms of 1754-1810, in which primary schooling and language instruction in Spanish was increasingly available to (or pushed upon) Indigenous communities (Vaughan 1990:33). The early colonial world had a much more diverse mix of languages, making it important for the friars to adapt to a broad array of language populations. As noted earlier, urban Tula, geographically located on the border between two very large language groups, would have had a mix of Indigenous languages. It is clear that it was the Franciscan friars, not the Indigenous peoples of Tula, who had to adapt to the linguistic field as late as the eighteenth century.

6.3 BUILDINGS AS SYMBOLIC WARFARE

The Cathedral and Open Chapel at Tula represent three related spheres of practice. The first sphere—construction of religious buildings—cannot properly be called "ritual," but nevertheless involves a communal practice that took place all over the new Spanish colony and that had specific requirements in terms of formality, aesthetic goals, and symbolism (see Córdova Tello 1992:37, Edgerton 2001, Kubler 2012). Construction of both Spanish and prehispanic buildings, as I will elaborate below, was deliberate and planned with future ritual practice in mind in both Spanish and prehispanic Mesoamerican cultures. The second field of action is the practice of communal worship in a semi-outdoor setting within and surrounding the Chapel and the Cathedral. Finally, and relatedly, the Open Chapel and the atrium of the Cathedral form material evidence of the New World Christian

[28] However, Calvo (2003:279) notes that while 31% of books printed in New Spain from 1539-1600 were in Indigenous languages, by the seventeenth century this proportion had diminished to 3%.

emphasis on theatricality (see Burkhart 1998, Clendinnen 1990). In what follows I explain each of these ideas.

Figure 6.3: Tula's Open Chapel, facing east, in 2008. The photograph was taken before Carol Vázquez's reconstructions in 2010 and 2011. Photograph by the author.

Figure 6.4: Detail of the original paintings that graced the interior walls of the Open Chapel. Photograph by the author.

Tula's Open Chapel, as discussed in the previous section, was commissioned by the Franciscan friar Alonso de Rengel only eight or nine years after the conquest of central Mexico. Almost five centuries after its abandonment, the building's three enormous walls and its sacristy to the south were still standing (Figure 6.3). Some of the original painted decorations in red and white, which originally covered the chapel's interior walls, have remained intact over the centuries (Figure 6.4).

My colleague Carol Vázquez (Vázquez Cibrián 2013) has worked to excavate, consolidate, and restore the Open Chapel in order to ensure its continued stability and to ensure that visitors to the Toltec site may also gain knowledge of Tula's colonial history. Her work there was inspired especially by the Italian and Spanish "*arqueotectura*" movement, or the archaeology of architecture (Vázquez Cibrián 2013:13-24). The movement emphasizes buildings as social constructions that are built over time, and therefore dependent upon particular technical and cultural knowledge. It emphasizes a Harris-type approach to buildings, noting their sequential phases of construction in order to illuminate the buildings' history and cultural millieux (Vázquez Cibrián 2013:13-24). The approach is incredibly valuable in demonstrating that monuments are not static.

Vázquez's excavations resulted in very important revelations about the construction of the open chapel. The chapel was constructed in several steps, in part revealing the exigencies of the period. The first phase was a rectangular apse, opening to a plaza that had been completely stuccoed in its interior and covered with geometric designs in red paint. The apse contained an altar as well as a staircase that led down to the remainder of the building and the plaza (Vázquez Cibrián 2013:171-176, see also Figure 6.5). In the building's second phase, the friar or friars commissioned two enormous walls, 9.4 meters in height, with regular battlements. These walls attached to the original apse and opened onto the plaza. This phase reused certain architectural elements from nearby Toltec-phase buildings (Vázquez Cibrián 2013:178). In addition to these walls, there are two additional low walls that form a short north-south boundary with an opening, which may have functioned as benches (Vázquez Cibrián 2013:182). In front of the low bench, excavators uncovered a low ramp made of stone. During this constructive phase the altar was raised significantly, and access to the altar was from the south side of the apse. Though many of the more fragile decorative elements have been lost, fragments of highly decorated plaster were still present in the debris of this phase, making it likely that the altar was ornately decorated (Vázquez Cibrián 2013:185). In a third and final phase, a small sacristy (14.8 m^2) was constructed to the south of the primary building. It was joined to the apse by a staircase that lead to the altar. In contrast to the rest of the building, the sacristy had shorter walls (3.05 m) and a simple stuccoed floor (Vázquez Cibrián 2013:190-194).

My excavations at the chapel in 2013 complimented Vázquez Cibrián's work by seeking to understand the longer constructive sequence at the chapel. That is, I was interested in finding out how the monument articulated with the Aztec and Toltec settlements that had preceded it. At the surface level, the chapel did not appear to intrude on any existing pre-Columbian monuments, which was a rarity in New Spain (as I discuss below, my excavations would complicate those assumptions). Another of my goals, explained in more detail in subsequent sections and in Chapter 7, was to understand the material culture surrounding the building: the daily lives and rituals of the community that inhabited and worshiped at the chapel in the earliest years of the colony. Finally, as noted in Chapter 1, I wished to relate those observations to data from the next phase of colonial Christian practice in Tula, at the Cathedral of San José.

Operations 1 and 3 at the Open Chapel site (see Chapter 4) were situated to understand the longer-term construction sequences at the Open Chapel, including possible Aztec and Tollan-phase occupations. In both excavation units, we observed that Aztec-era occupations rested on top of, or modified, likely Toltec-era architectural features. The sacristy of the Open Chapel was built directly on top of a prehispanic wall that was likely an Aztec construction (see Chapter 4, Figures 4.16 and 4.17). In Operation 1, the foundations of the Open Chapel rested very close to a Tollan-phase structure (see Chapter 4). Further, my project revealed material evidence throughout the Open Chapel excavations of intensive Tollan-phase and Aztec-era uses of the same landscape that would eventually become the site of early colonial Franciscan worship.

As outlined earlier, the Cathedral of San José was commissioned by Toribio Motolinía and overseen by Fray Antonio de San Juan. The complex is located approximately 1 km to the south of the Open Chapel, and had the effect of shifting the site of ritual from the Open Chapel location to its modern location (see Figure 4.3 in Chapter 4). It is also quite likely that the town's population also moved to the Cathedral area, since the shift would have established a new town center. This will have to be verified with further research. The Cathedral complex is far more complex than the Open Chapel; it contains an interior nave, presbytery, altar, and sacristy; a lateral chapel (which may have been added in the 17th century; see Kubler 2012:356), a bell tower, a cloister, and a convent (monastery) in which mendicants could reside. The complex includes a large atrium surrounded by a wall with battlements that rise several meters above street level.

I was very privileged to conduct the first archaeological investigations at the Cathedral of San José in Tula. My project excavated two large excavation units, both 6m x 2m. These excavations revealed several levels of modern and historic fill that overlaid a context that we interpret to be the original colonial level. Below this, we found Aztec-era modifications to a deep, Toltec-era rubble fill. This last feature was ubiquitous in our excavations and is associated with Tollan-phase ceramics (see Chapter 4, Operations 6 and 7). We therefore concluded that the Cathedral of San José was built on the remains of a Tollan-phase platform. The results of my research are preliminary, and further investigation is warranted to understand the stratigraphy and occupation there.

Though evidence (especially the construction sequence in Operation 3 at the Open Chapel and the colonial intrusions in Operation 6 at the Catheral—see Chapter 4) suggests that the mendicants knew about these pre-Columbian buildings, there are several possibilities regarding the pattern. One possibility is that placing the Open Chapel above these ruins was a deliberate act of symbolic conquest: replacing the new religion with the old. Another possibility is that the friars constructed their new temples in an area that did not have specific religious connotations to the Aztecs. In order to favor one hypothesis or another, it would be necessary to demonstrate, through material culture or some other means, that the location of the Open Chapel had religious significance in either of the prehispanic epochs. In what follows I present evidence that the Open Chapel does not show evidence of institutional religious practice during the Aztec era, based on the architecture found beneath it. The possible religious connotations of the Cathedral are still unclear.

The Toltec building that we encountered in Operation 1 at the Open Chapel did not likely have institutional religious significance, i.e., it was not a temple (see Chapter 4). Its wide adobe floors and circular pillar echo, instead, Toltec constructions that are popularly known as "palaces" (e.g. the Palacio Quemado and Structure K in Tula Grande), are more likely to have served as elite meeting houses (Healan 2012:101). Likewise, we did not find evidence to show that the walls and floors that we encountered in Operation 3 (see Chapter 4, Figure 4.6) served an institutional religious function. It was most likely a residence or civic building.

In contrast, the Cathedral was built on top of a rubble-core platform structure that may have formed the foundation for ceremonial buildings, though it should be clarified that I am basing this on general Mesoamerican patterns; my project did *not* find conclusive evidence of prehispanic temples at either site. We found ritual paraphernalia (such as braziers and censers) at both sites in both pre-Columbian and colonial-era contexts, but these items can also be associated with domestic ritual, as I explain at the end of the chapter.

Questions regarding the relationships between indigenous and colonial buildings are not trivial. It is often taken as a given, particularly in colonial studies, that the act of placing important Christian monuments directly on top of the ruins of the religious monuments of conquered Indigneous cultures is a transparent act of ideological warfare (Low 1995:749 presents an excellent summary of these assumptions). But buildings and landscapes are inherently multivalent; their presence and use holds different meanings for actors in different social positions (e.g. Hutson 2002:58-60) and the meanings of monumental architecture and landscape change over time (e.g. Meskell 2003:50). Even if the destruction of "idolatrous" buildings and their replacement with Christian monuments was part and parcel of religious imperialism, multiple Indigenous understandings of the same spaces meant that colonial religious buildings were often conceptualized in different ways. As Elizabeth Graham has noted for the Maya area, "...it is unlikely that places believed by the Maya to have accumulated power would have lost their force. New spirits or supernaturals were likely to have become associated with traditional places of power…" (Graham 2011:288).

In the Tula case notions of "ideological warfare" become even muddier because of the layered occupational sequence. As explained in Chapter 4, both the Open Chapel and the Cathedral were built on top of early Toltec remains that had been modified in the Aztec era. My data support previous conclusions (Healan 2011:95,97) that Aztec-era peoples tended to modify and re-inhabit Toltec-era buildings rather than undertaking major new building projects (see Chapters 4 and 5). Further, my project showed that the Open Chapel was not constructed on the remains of a temple; rather, the architecture that we unearthed appears to have been civic in nature (with the exception of the possible altar in Operation 5, see Chapter 4). The Open Chapel did, however, incorporate Toltec building materials into its fabric (Vázquez Cibrián 2013:178). The Cathedral was constructed on the remains of a Tollan-phase platform whose function in the Fuego and Palacio (Aztec II-IV) phases is still unknown. This platform may well have supported a temple or other construction in the Tollan phase or in Aztec-era Tula, but my investigations do not show conclusive evidence of this. Future investigators may discover evidence of pre-Columbian superstructures at the site.

The clearest evidence of Aztec-era institutional religious activity in Tula comes from Tula Grande itself (detailed in Chapter 5). The Tollan-phase buildings, and likely their significance, would have been at least partially understood during the colonial era, based on the fact that Aztec-era constructions there had colonial (Tesoro-phase) components (Figueroa Silva 1994:12-23). As well, archaeologists encountered a fragment of an Indigenous-tradition incense burner in Building K that bore the Franciscan shield (Vázquez Cibrián 2013:189). That the Spanish colonial religious structures did not interfere with these buildings, following patterns established throughout Mesoamerica, is significant. Our findings at Tula therefore destabilize simplistic notions of ideological warfare.

6.4 ORIENTATION, FOUNDATION, AND MATERIALS

Monumental religious buildings were constructed with ritual and symbolism in mind, yet in practice their associations and meanings were not stable over time. For Durandas, the 13th-century mendicant whose work on architectural symbolism was found in the library inventories of the Cathedral of San José, the primary symbolic significance of the Church was as a spiritual and physical "home" for religious communities. "The Church, *that is* the people forming it, is assembled by its ministers, and collected together into one place by 'Him who maketh men to be of one mind in an [sic] house.' For as the material church is constructed from the joining together of various stones, so is the spiritual Church by that of various men." (Durandus 1907:10, emphasis in the original). On the other hand, the primary symbolic significance of the Templo Mayor, the principal temple of the Aztec state, is that of an *axis mundi* that places itself at the heart of space and time (Lopez Austin and Lopez Luján 2009a:229-236 and Chapter 2).

Durandas's prescriptions for the ideal church are also very concerned with the symbolic significance of foundations. "The foundation must be so contrived, as that the head of the church point due east…wherein the sun ariseth at the equinoxes; to signify, that the Church Militant must behave herself with moderation, both in prosperity and adversity:

and not toward that point where the sun ariseth at the solstices, which is the practice of some" (Durandas 1907:14, see also Edgerton 2001:47). As is observable from my project maps (Figures 4.1 and 4.2 in Chapter 4, and Figure 6.5 below), Tula's Open Chapel and Cathedral are constructed in such a manner that they open to the West, and the sun at the equinox would rise directly behind the main entrance.

Orientation of religious buildings is one of the many similarities between Aztec religion and Catholicism that existed before either culture knew of the other's existence. Equinox orientation was evident at Teotihuacan, where the setting sun may be observed in line with the top of the Pyramid of the Sun (which has an East-West orientation) as well as two petroglyphs of crosses, several kilometers away, that are thought to have served as markers that were used in city planning (Aveni, Calnek and Hartung 1988:307). The orientation of the main temple at Tula (Pyramid C) is 17° south of East (Healan 2011:77). This Pyramid C was also a major focus of Aztec-era commemoration activities; this included several offerings and a small altar constructed in that era (see Chapters 3 and 5). The main temple of Tenochtitlan's ceremonial precinct, the Templo Mayor, was also initially oriented (in its first phases) to align almost precisely with the sun at the equinox. In later phases, the orientation likely shifted to allow observers to watch the sun rise between the twin temples at the summit of the pyramid, at 6.75° south of east (Aveni, Calnek and Hartung 1988:297). Initial measurements likely also utilized prominent, and religiously significant, mountains as reference points- for example, Mount Tlaloc (Aveni, Calnek and Hartung 1988:301-302). The Spanish religious design principles regarding orientation were therefore multivalent. To the Friars the orientation signified the sun and its relationship with the kingdom of Heaven; to the Nahuas it symbolized the sun in its relationship with the Gods and the beginning of the sacred calendar.

Christian symbolism equated the foundations of buildings with the notion of God's love as refuge and as the proper "foundation" for faith against various scourges, both literal and spiritual (Durandas 1907:14; Exodus 25, 26; Isaiah 28:16; Matthew 7: 25, Matthew

21:42). “Now a church is to be built in this fashion: the foundation being prepared, according to that saying, ‘It fell not, for it was founded upon a rock’” (Durandas 1907:14, quoting Matthew 7: 25). At Tula, as at many other sites in Mesoamerica, Christian buildings were not “founded upon a rock” but rather embedded in the rubble of pre-Colombian landscapes—a gentle irony, considering the instability of the evangelization project. At Tula’s Open Chapel, my project revealed that the foundations of the building were only slightly wider than the Open Chapel’s walls (protruding only approximately 10 cm from the vertical surface, see Chapter 4, Figure 4.5). These intruded only slightly into pre-Columbian architectural contexts. The techniques used to construct the foundations were similar to the fundamentally pre-Columbian techniques (Vázquez Cibrián 2013:95) used to create the Open Chapel’s walls; they consisted of varying sizes of limestone and basalt stones held together with a cement made of lime, sand, and water (see Figure 4.4 in Chapter 4). Because of excavation limitations we were not able to study the foundations of the Cathedral, but the general contexts there indicate that the building significantly intruded into a pre-Columbian platform.

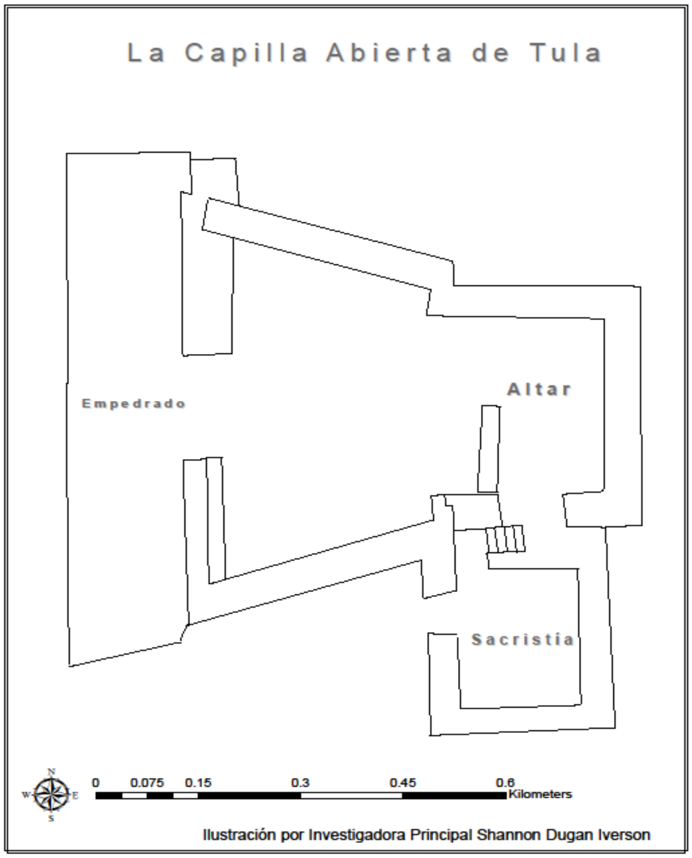

Figure 6.5: Map of Tula's Open Chapel, facing north. Illustration by Shannon Dugan Iverson.

Even cement took on symbolic significance to Durandas: "The lime is fervent charity, which joineth itself to the sand; that is undertakings for the temporal welfare of our bretheren…lime and sand are brought together in the wall by an admixture of water. But water is an emblem of the Spirit…" (Durandas 1907:15). Lime may also have had ritual connotations to the Aztecs. The lime used in all phases of the Templo Mayor came from outcrops near Tula (Mirello et. al. 2011); we have no way of knowing whether this was was for political, practical, or symbolic reasons, but historical and geological evidence indicates that there were multiple outcrops at roughly equal distances from the capital (Mirello et. al.

2011:1121). Given the rich associations between the Aztecs and their predecessors (Chapter 5), a symbolic reading is not out of the question.

In considering the construction techniques and symbolism of the colonial religious buildings of central Mexico, it is important to note that these were commissioned by friars with little architectural expertise (Kubler 2012:159) and depended upon Indigenous labor for their completion (Edgerton 2001: 49, Kubler 2012:186, Gibson 1964:111-112). Particularly in the earliest years of the colony, religious buildings relied heavily on Indigenous artisans' knowledge of materials and construction techniques (Edgerton 2001, Kubler 2012:171); thus Tula's Open Chapel echoes prehispanic techniques (Vázquez Cibrián 2013:95-105). The interdependence of friars and Indigenous artisans and Indigenous labor, in addition to these construction techniques, should lead us to question the notion (Kubler 2012:158-159) that the variation of Mexican colonial buildings is entirely the result of the friars' imperfect memories of Spanish architecture. Instead, the significant Indigenous contributions to these buildings should be noted and emphasized.

6.5 AN OUTDOOR SETTING FOR CEREMONY

The unusual shape of the Open Chapel merits some investigation in light of these Indigenous contributions. The shape of religious buildings (in rectangular, circular, or cruciform configurations) merited much commentary from Durandus (1907:16-18). None of these idealized formulations concurs with the anomalous shape of the Open Chapel, which has a form that is unique to the New World[29]. The Open Chapel at Tula consists of three walls, originally built to house the altar and later extended to encompass a larger area for worship, which could be extended to the surrounding patio (Chapter 4, Figure 4.2). It is necessary to speak at some length regarding Open Chapels, because this building type is thought to have significant cultural input from Indigenous modes of worship (Artigas

[29] Kubler (2012:389) disputes this, citing authors who support the idea that open chapels had precendents in the Old World, specifically in Christianized Moorish temples. Among these are Torres Balbas (1948), Erwin Palm (1953), and Bonet Correa (1978). However, Edgerton (2001:58) agrees with McAndrew (1965: 237-40) in determining that the primary inspiration for the configuration of atria was pre-Columbian architecture.

1983:13). These conclusions are based in part on the fact that Open Chapels have no direct European precedent (Artigas 1983:15), and in part on the increasing recognition that colonial atria accommodated pre-Columbian ideas of the *axis mundi* (Edgerton 2001:58, McAndrew 1965:237-40). That is, they did not have direct pre-Columbian antecedents, but the atria stylistically accommodated and incorporated Indigenous design and religious ontologies; this is similar to Setha Low's arguments regarding the multiple design traditions incorporated into Spanish-American plazas (Low 1995).

Kubler (2012:388-389; see also Artigas 1983:29) has argued that Open Chapels—which are ubiquitous in central Mexico—were the product of expedient design, built as temporary measures until the more permanent structures could be completed. Kubler (2012:389) makes clear his opinion that these structures existed to serve remote communities; built to assist friars that were required to travel and administer to large communities; by the 17th century the Church was more established and each community could have its own church, the Open Chapel was obsolete. Open Chapels often formed the first phase of larger, more ambitious construction projects (Kubler 2012:390-391). However, as Artigas very clearly points out, functionalism provides very little room for any examination of aesthetic (or symbolic) intention (1983:22). In my own opinion, concentrating solely on expediency also negates Indigenous input into building design. Finally, expediency did not mandate a three-walled system; the fact that the sacristy at Tula was built with four walls suggests that the design of the Open Chapel was intentional despite, or in addition to, its simple and swift construction.

There are many types of open chapels in the Americas; they may be built into the main structure of a monastery itself on the first or second level, built inside of an atrium as part of a larger complex, constitute an entire church, or may be isolated structures (Kubler 2012, Artigas 1983). Elizabeth Graham presents an important discussion that posits that many structures that are called "open chapels" are not entirely "open" nor properly "chapels;" the term may be entirely inappropriate in the Belizean context (Graham

2011:170-175). Kubler gives three prototypes of open chapels: 1) provisional churches without lateral walls; permanent constructions that are simply roofed presbitaries; and "fully developed" structures that differ from other constructions simply in that they have one façade that opens to the atrium (Kubler 2012:391-392).

The only commonality of what researchers[30] call "open chapels" is that they all facilitate outdoor worship (Kubler 2012:390)[31]. Across sources, the associations between Open Chapels and Indigenous worship are noted (Edgerton 2001, Kubler 2012:389, 393). Tula's Open Chapel is a slightly more unusual construction in that it is a "*capilla abierta aislada*," or isolated open chapel (see Artigas 1983), meaning that it was never associated with a larger religious complex. My argument, which echoes the broader observation of other scholars (Edgerton 2001), is that the religious buildings in Tula echo salient elements of prehispanic ritual. In particular, the public, outdoor, and celebratory nature of Aztec rites likely influenced the ways that communities collectively decided what constituted proper ritual (see Bell 1992:80-81).

Pre-Columbian ritual took place outdoors, with the public situated in a central plaza, which was flanked by one or more major temples. At Tenochtitlan the principal temple was the Templo Mayor and other temples to major deities, where the festivals took place according to the ritual calendar (see Chapter 2). Aztec ritual could take place in a natural setting (such as the sacrifice of children or the lighting of the New Fire on mountaintops (Sahagún 1997:56), outdoor and indoor domestic contexts (such as the gathering of corn or the flagpoles adorned with paper with liquid rubber designs [Sahagún 1997:56]), in the streets of cities (such as the processions of women during the Festival of Toxcatl [Sahagún 1997:58]), and, clearly, at temples and central plazas (e.g. Sahagún 1997:59). Public rituals

[30] According to Graham (2012:171) primary sources call these structures "chapels," but never "open."
[31] Graham (2012:174) makes the important point that structures in Yucatan and Belize show evidence of vertical poles to support thatched roofs; she notes that because it is difficult to ascertain archaeologically whether these structures would have had walls made of perishable materials, researchers usually (perhaps incorrectly) assume that no such walls existed.

incorporated sacrifice, processionals, symbolic feasting, fasting, singing, dancing, and particular adornments (Sahagún 1997:55-69). The importance of an outdoor setting for ritual is apparent from the documentary evidence and the material evidence from important sites such as the Templo Mayor.

Two important elements of this religious practice carried into the colonial era and influenced the eventual ubiquity of the Open Chapel constructions as well as the atria of more formal monastery designs: the outdoor setting of public ritual, and the theatricality and celebratory nature of pre-Columbian ritual. To my knowledge, even those who emphasize Indigenous contributions to open chapel design do not remark upon the centrality of outdoor celebrations of mass except in terms of pragmatism (i.e. open chapels allowed friars to administer to masses of people that could not be accommodated indoors) (Edgerton 2001:47, 55). However, three factors appear to support the idea that Open Chapels were built in part to facilitate an Indigenous preference for outdoor worship. First, open chapels are quite diverse, as stated, their only commonality being that they allow worship to take place outside. Second, open chapels were novel, having no precedent outside of the New World. Third, these constructions were often the first structures built; later structures could envelop or annex them. However, open chapels were also *added* to existing complexes that already had indoor structures (e.g. Córdova Tello 1992:76-84), indicating that it was still important to accommodate outdoor ritual, even in structures that more clearly mimicked Renaissance-era buildings of the Old World.

The issue of theatricality is, of course, less obvious in the material record, but is well supported by documentary evidence. Samuel Edgerton has noted that the *Rhetorica Christiana* by the Franciscan friar Diego de Valadéz of Tlaxcala (written circa 1579) emphasized the practice of *ars memoriae* (art of memory) by using the senses and physical movement to help neophytes remember the liturgy. In this practice, objects, paintings, spoken words, etc. combine in storytelling. This practice was considered a crucial teaching tool in 16th century New Spain (Edgerton 2001:237-245). The practice was all the more useful for teaching Indigenous neophytes, who already had rich culture of symbolic language, as evident in the calendar system (Edgerton 2001:241). An important consequence of this practice was that the buildings themselves served as what Edgerton has called "memory theaters"- mnemonic devices that incorporated important stories into their design in order to inculcate belief. Friars recognized the rich symbolic system of the pre-Columbian world, and attempted to bridge the religious gap by appealing to those values.

But open chapels and monastery atria were also used more literally as theaters, as noted earlier in this chapter. *Autos*, or religious plays, were regularly performed in the early years of New Spain (Edgerton 2001:156). These could have various religious themes, such as the story of the Garden of Eden or the Siege of Jerusalem (Edgerton 2001:157-158). The plays were public spectacles that took place outside; Motolinía described them as occurring in the monestary atrium in Tlaxcala and in the central plaza of the same town (Edgerton 2001:156, 158). Though the plays themselves had obvious allusions to pre-Columbian religious practices (Edgerton 2001:156, 158), they were generally approved of by the friars. Friar Diego Durán noticed the wide variety of Indigenous public spectacles that featured dancing, songs, and oratory performances, often with approval: "Let these things [songs and composers] be noted by those who look with contempt upon the way of life of these Indians and who doubt that they had civilization… today the chiefs keep singers… I do not consider this improper" (Durán 1971:299).

Indeed, in Tenochtitlan, public spectacles that included song and dance took place at least every calendar month in celebration of particular deities (Durán 1971, Edgerton 2001:61, Sahagún 1997); performance was also used to celebrate the bravery of warriors, as part of courtship rituals; as pure entertainment; as a noble celebration of genaeology and history; and for myriad other reasons (Durán 1977:287-300). Spectacles could be farcical, solemn, holy, or bawdy (Durán 1977: 287-300). Regardless of the tone, theatricality and performance were central to Indigenous life in the pre-Colombian era.

Theatricality continued in the tradition of *autos,* which existed in Europe but were seized upon by Indigenous peoples, who reworked and produced the religious plays with enthusiasm (Edgerton 2001:158-159). Performance and spectacle shaped what Indigenous people thought of as proper ritual, and these ideas formed a major part of shaping colonial rituals.

When I began my excavations at Tula, I assumed that the Chapel and the Cathedral represented two very different modes of evangelism. The buildings were very different: the Chapel seemed provisional and open, the Cathedral seemed fortress-like, imposing, and formal. I had not previously considered that the atrium of the Cathedral might have been as important as the open spaces at the Open Chapel where the religious community in Tula came together to worship. However, the discovery of the foundation of another, colonial-era structure in Operation 7 (see Chapter 4), though its function is still unclear, indicates that this space served a greater variety of functions in the early colonial era than it does in the present day. This feature was associated with a stratigraphically distinct, colonial-era soil approximately 9 cm deep (Contexts 8, 9, 10, and 14,[32] see Chapter 4, Operation 7) that contained, in total, 49 colonial-era and Aztec ceramic sherds[33]. Later contexts contained even more ceramics (see Chapter 4, Figure 4.44), indicating intensive use of the atrium until the modern era. The combined architectural and ceramic evidence indicate that the atrium was an important outdoor component of the monastery complex. The idea that the outdoor religious practice that was the hallmark of the Open Chapel was discontinued when the religious community moved to the Cathedral location is not supported by my evidence.

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[32] Combined, these contexts contain 19% of the total number of diagnostic ceramics in the unit, representing about 1.08 m2 (12.6%) of excavated soil. (We excavated approximately 8.56m2 of soil in the entire operation.)

[33] Toltec sherds are found throughout the excavation levels except in the highest levels; we interpret this as being due to the fact that this was a Toltec structure whose fill was moved and redistributed frequently; Toltec sherds are bound to be present throughout even in cases in which they were not actively used by colonial-era inhabitants.

The Cathedral complex was more “accommodative” in the colonial era than is indicated from surface-level observations of standing architecture. Based on the present evidence, it is probable that the Cathedral’s atrium continued to serve similar functions as the Open Chapel had. The new building had more room for resident friars, libraries, offices, and the option for indoor as well as outdoor celebrations of mass and festivals. Further, my map (and surface-level observations) accord with McAndrew’s (1965: 337-40) and Edgerton’s (2001:58-61) framing of the colonial atria as a quincunx, or symbolic reference to the four directions and a central point, that was influenced by the Aztec *axis mundi* (see Chapter 4, Figure 4.2, and Chapter 2). These material observations should be added to the historical documentation regarding the widespread practice of staging religious plays in the atria, as well as the use of the atria for feasting and public festivals (Edgerton 2001:156,158, 161). The Open Chapel and the atrium at the Cathedral supported the incorporation of these particularly Indigenous ritual notions in the colonial era.

6.6 RELIGIOUS PRACTICE: BURIALS

The 2010 INAH excavations at the Open Chapel, directed by Carol Vázquez Cibrián, uncovered evidence of colonial-era burials, 11 of which remained *in situ* (Vázquez Cibrián 2013:148). The osteological investigation for these remains was conducted by the physical anthropologist Eira Atenea Mendoza Rosas, and is summarized in Vázquez Cibrián’s thesis (2013: 141-149). Ms. Mendoza also wrote a longer report of the same remains (Mendoza 2010). My own project contracted Valerie Davis, an osteologist, to conduct a detailed paleopathological analysis of the same remains, the results of which will be the subject of a future publication and which I only briefly summarize here. I include Davis’s report in Appendix B in the interest of providing comparative data for other researchers; other information about the burials may be found in Vázquez Cibrián’s thesis (2013).

Some of the human remains at the Open Chapel had been disturbed in the colonial era due to accidental post-depositional disturbances. That is, the community at Tula interred groups of individuals that they then disturbed while excavating burial areas for new groups of people. This speaks to the devastation incurred by massive population loss in colonial Tula. Because of these activities, Ms. Davis's analysis provided an MNI (minimum number of individuals) and MxNI (maximum number of individuals) based on the possibility that multiple individuals were represented in some of the burial contexts. She established an MNI of 34 individuals and an MxNI of 124 individuals, not including the 11 that remained *in situ* (see Appendix B). Within this population, skeletal pathologies included seven instances of degenerative joint disease (osteoporosis), three individuals with healed injuries, and two individuals with bowed limbs (Appendix B). At least 11 individuals exhibited periodontal disease, and four exhibited hypercementosis (the overproduction of a substance that affixes the root to the surrounding tissues). Only 7.5% of the 711 teeth in the sample exhibited a carious lesion (Davis nd.:56). Davis's analysis concluded that male and female diets were similar based on the prevalence of caries and similar tooth wear patterns by sex (Appendix B). She also concluded that a varied diet contributed to the low instance of dental caries (Appendix B). I discuss the colonial diet in in terms of religious practice in Chapter 7.

Vázquez Cibrián and Mendoza's excavations revealed that the religious community had created large burial pits that intruded into prehispanic floors (Vázquez Cibrián 2013: 149). Multiple individuals were interred simultaneously in these pits. Excavations at the Open Chapel revealed that individuals were buried in a extended positions, with individuals resting on their backs or sides (Vázquez Cibrián 2013:140). Their orientations often alternated between an east-west and west-east orientation; the most common burial position included arms and hands that were folded in prayer (see photograph and map in Vázquez Cibrián 2013:140, Figure 58). The density of remains in a relatively small area (at least 45 individuals in the space of a 6m x 3m unit), their positions, and the fact that they were buried in large communal pits all suggest that these individuals were victims of the devastating epidemics that swept through Mexico throughout the early colonial era (Vázquez Cibrián 2013:141, Mendoza 2010).

My excavations in 2013 deliberately avoided excavations in the atrium of the Open Chapel. Our project goals did not include the excavation and analysis of more burials, since Vázquez Cibrián's investigations had already revealed sufficient evidence of human remains that deserved full investigation before another project revealed more burials. Those burials that we did discover (in Operations 2 and 5 at the Open Chapel, see Chapter 4) were close to pre-Columbian adobe floors and were not likely colonial. We based this opinion on some evidence that the individuals were interred in flexed positions; they were both encountered at levels that did not include colonial ceramics or other evidence of colonial-era material culture. We protected these burials and left them *in situ* for future investigators.

As discussed in Chapter 4, my project also revealed a colonial-era burial at the Cathedral of San José (Operation 6, Context 55). This single individual reveals important contrasts and similarities in burial ritual between the Open Chapel and the Cathedral of San José. In what follows, I examine burial evidence from my own excavations as well as previous investigations, including those at the Open Chapel.

It is clear from the archaeological evidence that burial practice changed very shortly after the arrival of Franciscan friars in Tula. Commoners in the Aztec era were buried in flexed positions, often in houses or house courtyards (Smith 2012:212), or sometimes in fields, shrines in the woods, or cremated and placed in temples (Durán 1971:121-122). My own limited evidence of prehispanic burials fits the first pattern. Michael Smith asserts that the location of commoner Aztec burials provides clues as to their values regarding death: "The dead were still considered part of the family, and they took their place within the domestic compound. It is likely that families conducted rituals or made offerings to their deceased members…" (Smith 2012:212-214).

In Tula, Acosta found evidence of what he called an Aztec cemetery at the site known as El Salitre (Acosta 1945:48-51, see Chapter 3). Acosta mentions little regarding these burials or associated architectural features. The individuals encountered were encountered in flexed positions with various directional orientations. They were associated with variable numbers of grave goods; when present, these were chiefly whole or partial Aztec ceramic vessels, though one was an earlier Mazapa Red-on-Brown type (Acosta 1945:51). The temporal relationships, architectural information, and other important information regarding these burials is largely lacking in Acosta's published accounts.

The pre-Columbian patterns changed in the early Colonial era to group internments in a single religious space (the Chapel's atrium). Burial position also changed; unless they were disturbed, individuals interred at the Chapel during the Colonial era were almost always encountered in extended positions, usually with the hands folded across the chest and fingers interlaced in a position of prayer. This was also true of the individual that we excavated at the Cathedral. Absent DNA information, it is unknown whether the individuals interred together at the Open Chapel were members of the same family, but surely, they were members of the same religious community. Christian burial practices, too, stipulate that family members (particularly husbands and wives) be buried together and that families be interred in the same plot; this has been a feature of European burial tradition since at least the 13th century (Durandas 1907).

This material pattern indicates that throughout the early colonial era, death and burial rituals adapted to a significant extent to Spanish friar's preferences. Yet the burials at the Open Chapel are also, clearly, as much a product of devastating epidemic disease as they are rituals that commemorate the life and death of individuals. One of the burial pits that Vázquez excavated at the Chapel contained at least 14 individuals that had been interred simultaneously (see map in Vázquez Cibrián 2013:140). It is difficult to imagine, from either the European or Indigenous point of view, the devastating emotional impact of burying fourteen members of one's community simultaneously, and to do so repeatedly for many years. How did the friars comfort the community at Tula? How did Indigenous communities make sense of the horrific impacts of disease? Was it a comfort to bury these individuals together—a communal answer to a problem that affected so many people simultaneously—or did the new burial methods exacerbate the devastation? How did epidemic disease affect pre-Columbian notions of death as a form of fertility and renewal, or of the ancestors as sustainers of the living (Smith 2012:211-212)?

Of course, we cannot know the answers to these questions based on archaeological data alone. But we do know that at the Open Chapel location, the dead were literally underfoot[34]; existing under the same spaces where congregants stood to hear mass, attend baptisms, and celebrate the holidays of the Christian religious calendar. When the center of worship moved from the Open Chapel to the Cathedral location, the atrium may have continued to be used as a burial site. However, the fact that we found evidence of only one burial in our excavations there, and that the individual interred was buried alone, suggests that by the 1550s the mortuary practices had changed. It is possible, as I suggested in Chapter 4, that the mendicants established a cemetery elsewhere in Tula, away from the religious complex, or continued to use the Chapel itself. Epidemic disease continued to devastate Indigenous populations throughout the 16th century (Cook and Borah 1971), but the dead no longer had the same immediate presence on the physical landscape as they had at the Chapel location. Of course, further excavations at the Cathedral would be necessary to verify that hypothesis.

Modern-day Christian practices in Mexico, particularly the Day of the Dead festival, provide some clues as to how Indigenous notions of death influenced Catholicism (Smith 2012:218). Durán noted that preexisting Indigenous meanings were infused into this

[34] However, analysis of the ceramics from Vázquez Cibrián's (2013) excavations have not been completed and even in that case it will be difficult to be certain regarding when burial activities began. The multileveled burials, some cut into each other and displacing other burials, indicate the atrium's long-term use as a burial ground. Based on this evidence I have made the assumption that the atrium functioned as a burial place during its use as a religious building and possibly afterward.

ceremony: “they still hold their feasts for the dead: one for children and one for adults. I am certain that they mix some [of the ancient practices] with our Day of the Faithful Departed” (Durán 1971:122-123). Substantively, this tradition in Mexico often involves processions, offerings at altars in the home, and (most ubiquitously) vigil at the gravesites of family members. Families of the deceased will clean the tombs of their ancestors, and bring them food, flowers, alcohol, cigarettes, and any other comestibles that they may have enjoyed in life. Many believe that on the 2nd of November, their deceased family members will watch over them (for a summary of the holiday and its history, refer to Brandes 1997). It is not accurate to state that this tradition is a direct “survival” of Indigenous religious practice. It is, however, appropriate to frame it as a celebration of death that could not have existed in the absence of Indigenous contributions. Modern practice suggests that ritual commemoration of the ancestors in the home continued despite the absence of the physical remains of those ancestors.

6.7 RITUAL OBJECTS

Artifacts that are considered “religious” are most often those that can be directly tied to Christian or pre-Columbian ritual practice. In terms of Catholic colonial ritual practice, artifacts in this category include rosary beads, objects used to burn incense (such as censers), and needles used to pin shrouds in burials. Pre-Columbian ritual objects also include censers, as well as sculptures, complex ceramic vessels, obsidian mirrors, and ceramic figurines (Graham 2011:189-222, Halperin 2014:133, Joyce 2001:545, Smith 2011:561-562).

As I explained in Chapter 1, part of the reason that religion has been so difficult to study from a material perspective is that our notions of religious material culture are limited (Insoll 2004). In the pre-Colombian world, for example, sumptuous caches of artifacts from throughout the Mesoamerican world were made into offerings (properly “religious” offerings) by virtue of being rare, carefully curated, and placed into a sacred context. The exotic shells, obsidian, animal bones, and other artifacts that formed part of elaborate offerings at the Templo Mayor (Lopez Austin and Lopez Lujan 2009a) would not be recognizable as "religious" in another context. Yet everyday objects could be used for ritual purposes; this is evident, for example, in the practices that Durán describes wherein people would bring gifts of "incense, wine, rubber, little bowls, and baskets" to priests as offerings (Durán 1971:121). Innumerable events in Aztec ritual practice required the use of objects that would never register as religious, though numerous documents confirm this function. I address this topic more extensively in Chapter 7.

Nevertheless, we do have evidence of many of these ritual objects in Tula. Carol Vázquez's project found only a few objects of European origin associated with burials (personal communication); these included a needle that was probably used to pin a shroud. My own excavations uncovered colonial and European objects (including two 16th-century coins, nails, and a small lead musketball), but none of these objects are traditionally classified as being directly related to ritual.

Instead, "ritual objects" tended to be Indigenous-tradition objects. Censers and incense burners were found in significant quantities at both sites; 248 *incensario* and *sahumador* (including Texcoco types) fragments[35] (see Appendix A) were recovered at the Open Chapel and 335 were recovered at the Cathedral; 100% were of Indigenous tradition. Figure 6.6 below, one of the most complete *incensario* fragments that we found at the Open Chapel, was found in a context that we have interpreted as a colonial refuse pit (see Chapter 4, Operation 3, Context 14). These findings contradict Hernández Sánchez's (2012:210) statement that in the colonial era censers "were less used in ritual contexts. In part, this was because pottery censers were clearly identified with pre-Hispanic religious practices, and were therefore suppressed."

[35] Please note that this count is of all vessel fragments and includes all temporalities at Tula. Our count of Texcoco wares at the Open Chapel was 71 sherds; we found 6 sherds of Texcoco wares at the Cathedral (see Appendix A).

Aztec priests used censers during rituals to burn copal incense, made from copal trees (Smith 2012:218). People also used censers in domestic rituals in the home (Smith 2012:218-219); they were an important part of participation in daily ritual for priests and laypeople as well as monthly ceremonies (see Berdan 2014:236, 238). These objects had long, hollow handles (see Figure 6.6) that contained small ceramic balls to produce a rattling sound. They may thus have formed part of the instrumentation that is known to have been important in Aztec ritual processions and public celebrations (Berdan 2014:238-239). They are still manufactured seasonally in Mexico for Day of the Dead ceremonies, during which they are used to burn incense (Hernández Sánchez 2012:190). From the evidence at Tula, it is clear that these objects contributed to the materiality of New World Christianity; they are found even in contexts that are closely associated with Tula's sacristy.

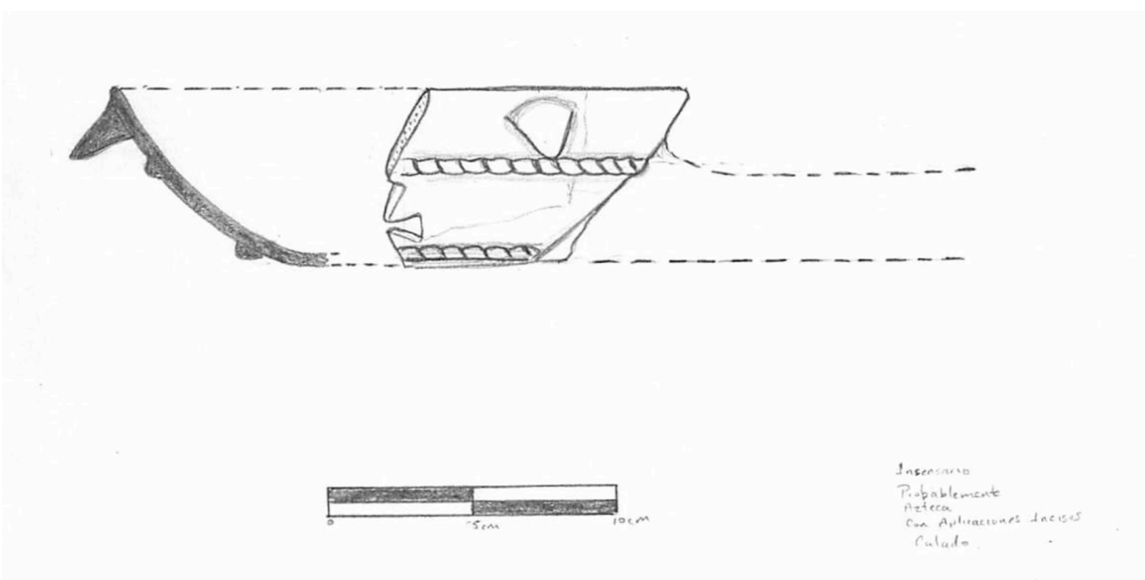


Figure 6.6: Large *incensario* fragment found in Operation 3, Context 14 at the Open Chapel. Illustration by Daniel Correa Baltazar. The fragment features decorative applications to the vessel exterior, as well as perforations.

We found prehispanic figurines in every excavation unit at both sites: 58 fragments at the Open Chapel, and 86 figurine fragments at the Cathedral. There has not yet been time to complete a detailed study of the figurines, but I will offer a brief preliminary description here. Aztec figurines are found throughout Aztec-era sites, and are made from the same orangish paste as Aztec ceramics (Brumfiel 1996: 149). In Aztec contexts, most figurines are anthropomorphic (Brumfiel 1996:147, Smith 2011:562). They are associated with household debris and sometimes with burials (Brumfiel 1996: 149). Figurines are most often associated with household religious practice, and are often used to contrast local or household ritual with state ritual (i.e. Brumfiel 1996, Smith 2011:566-567). Within figurine types are included small rattles, which were used in prehispanic times as musical instruments during processions (Berdan 2014:238).

Figurines recovered during my excavations include anthropomorphic (male and female) figurines; animal figurines (including birds and dogs), and figurines that appear to represent deities (see Figure 6.7). We also found fragments of ceramic wheels that are commonly associated with an Aztec toy figure, usually a dog (Miller 2012:123). At the Cathedral, we also found one fragment that appears to be a figurine mold. A more thorough study of the figurines from my excavations and previous excavations will allow for a detailed analysis of the differences and patterns relevant to the three major occupations at Tula, as well as more precise data regarding the proportions of various figurine types (i.e. zoomorphic, anthropopomorphic). The figurine fragments have been collected as part of my project's *muestrario* (demonstrative collection) and are available for further study.

Spanish friars recognized that figurines had religious connotations—indeed, our understanding of these objects is derived from their records (e.g. Durán 1971, Sahagún 1997). Nevertheless, figurines continued to be present in colonial and historical contexts. For example, the figurine heads in Figure 6.7, which we have tentatively identified as depicting the "Old God," Huehueteotl, were both encountered in Operation 6, Context 8, which we have interpreted as the original colonial context of the atrium.

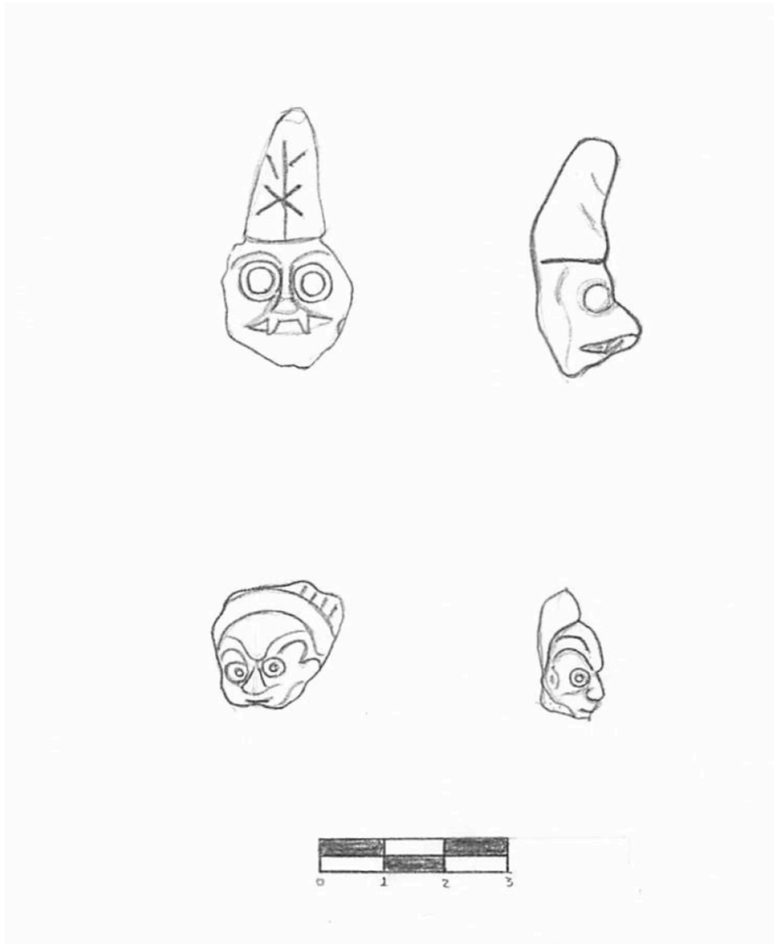


Figure 6.7: Two figurine fragments from Operation 6, Context 8 (a colonial context) at the Cathedral of San José. Illustration by Daniel Correa Baltazar. My team interpreted these fragments as representing Huehueteotl, the Old God, based on the figurines' wrinkled faces.

6.8 CONCLUSIONS

In certain ways, the Tula's Open Chapel and Cathedral conform to expectations and general patterns in Latin America. The Chapel represents the provisional structures speedily constructed to indoctrinate the Indigenous populations, while the Cathedral (in continuous use since the 16th century) was constructed in 1550—a time of increasing church wealth, stability, and bureaucracy (Lockhart 1992:45, Ricard 1966:136). Yet to see these buildings as merely reflective of these colonial realities is to flatten their significance as sites of communal ritual. We also miss important insights regarding Indigenous contributions to the creation of new rituals in colonial Mexico.

The Spanish mendicants that arrived in Tula encountered a landscape that had already been, in Elizabeth Graham's terms, "mythologized" (Graham 2011:287). As explained in Chapters 3 and 5, Tula had already seen the construction and destruction of two major ceremonial centers (Tula Chico and Tula Grande), followed by intensive religious and commemoration practices in the Aztec era. These layered meanings did not simply dissipate once the Spanish friars arrived. Confounding the issue is the fact that the friars did not interfere with Tula Grande, the only site that is so far known in Tula to show conclusive signs of institutional religious practice in the Aztec era (see Chapter 5). Instead, the friars built religious buildings in an area of dense Aztec-era activities and Toltec civic architecture (the region surrounding the Open Chapel). Later, they occupied a large Toltec platform structure that had been occupied (though less extensively) during the Aztec era; we have not yet determined the original structure's significance. These patterns destabilize common ideas about colonial structures as transparent symbols of ideological warfare. That is, even if it is shown that the Cathedral supplanted a Toltec-era temple, what would this mean? We cannot know for certain, but the political and religious ties of the Moctezumas to the Church may have been a factor, or the friars may simply not have fully understood the significance of Tula Grande.

Burial practices in Tula were circumscribed by mendicant requirements from the earliest years of the colony, as is evident from my excavations at the Cathedral and Carol Vázquez Cibrián's (2013) investigations at the Open Chapel. However, epidemic disease was a devastating reality that shaped death rituals in Tula as much as the new religion did. Further, the new method of communal burial in a single location did not preclude the commemoration of the ancestors at cemeteries and in homes; new ritual practices (including the Day of the Dead celebrations) thrived in colonial Mexico and continue to the present day (Brandes 1997). It should also be noted that comparative data from colonial-era houses is necessary.

Against my expectations, the material culture from both sites showed evidence of the continuing importance of outdoor worship and public festivals and ceremonies. This was evident in the architecture of the Open Chapel and the architecture that we revealed in the atrium of the Cathedral. As well, ritual objects found at Tula in both the Open Chapel and Cathedral sites are of Indigenous tradition. We found these objects in colonial contexts, including the primary refuse deposit immediately adjacent to the sacristy (Operation 3, Context 14), to the exclusion of European objects. The ritual object collection included the Indigenous-tradition censers that probably formed part of the musicality of public ceremony in the pre-Columbian world, a tradition that apparently continued in the colonial era. This finding speaks to the wealth of Indigenous contributions to colonial Christianity. It also indicates that Friars were adapting to Indigenous-tradition material culture much more than Indigenous peoples were adapting to European-tradition materials.

In sum, the material culture at both the Open Chapel and Cathedral locations reflected and enacted the creation of an entirely new ritual practice. These practices cannot be easily separated into distinct worlds, but rather are the result of a community collectively determining what constituted proper ritual—a process of resignification in which both friars and Indigenous subjects had to adapt to new worlds. Materials, bodies, and landscapes all formed important components of those practices.

In this chapter, I have tried to heuristically shift from a perspective that understands Indigenous peoples as adapting to Spanish hegemony to a different perspective that sees Spanish friars as having to resist an overwhelming force of Indigenous cultures that surrounded them in space, time, and everyday interactions. As is evident from the material culture at Tula, ritual was not an excellent vehicle for social control. This perspective has proved a much more adequate frame for understanding the material culture that I observed in Tula than models that posit top-down impositions of Christian rites. Indigenous peoples formed the vast majority of the population of the colony. Its history and its landscape were theirs; it is therefore natural that their contributions to the religious rituals of New Spain should be so readily apparent.

> "…nearly every Church hath her own observances, and attacheth to them a full meaning of her own…according to the Prophet, with the like diversity, and in the administration of the sacraments themselves a variety of customs is tolerated, and that rightly."
>
> –Guillaume Durand, 13th century (1907:7)

CHAPTER 7: RELIGION AND POWER IN COLONIAL TULA

7.1 INTRODUCTION

As I have tried to make clear in this dissertation, Spanish friars in Tula were forced to adapt to a world in which Indigenous landscapes, material culture, and ritual practice fundamentally constrained friars' abilities to freely enact their Utopian visions. In Chapter 5, I showed that the landscape at Tula had already been "mythologized" in Aztec-era Tula (see Graham 2011:278). In Chapter 6, part of my argument was that the friars' notions of ideal religious practices and landscapes could not be enacted. Instead, they relied heavily on Indigenous artisans and the Indigenous preferences for outdoor worship and theatricality, which in turn influenced the physical spaces of ritual. I also discussed the continued use of Indigenous-tradition ritual objects.

These findings form part of what Louise Burkhart (1998:368) has called the friars' "ontological sleight-of-hand." In other words, the friars were able to convince themselves that the Nahua religious continuities that had immediately changed Christianity were actually markers of true faith and enthusiastic conversion. This is especially evident when examining Indigenous contributions to the format of ritual (see Chapter 6) and when examining everyday material culture patterns. Over and over the mendicants noted these material continuities: youths decorated the Churches with "bouquets, flowers, and grass," as they had in pre-Columbian times (Durán 1971:121, Burkhart 1998:368). Durán (1971:51) noted that "heathenism and idolatry are present everywhere: in sowing, in reaping, in storing grain, even in plowing the earth and building houses." Friar Toribio Motolinía[36] noted that during an Easter celebration, the Indigenous subjects of Tlaxcala brought an enormous offering of "corn and beans, peppers, sheep and pigs, and hens of this

[36] I remind the reader that Motolinía was the *provencial*, or regional authority of the Tula region when the Cathedral was constructed.

land which are as big as three or four hens from Spain—the brought one hundred and forty of these, and infinite hens of Spain" (Motolinía 1985:258). Of course, these food offerings were substantively similar to pre-Columbian food offerings during the calendar cycle (see Durán 1971, Moran 2007:200-201, Sahagún 1961). The friars were not ignorant of the meanings of these everyday foods in celebratory contexts: "it must be noted that the offerings of strings of ears of corn and flowers on the Day of Our Lady in September and during the festivities in that month are a survival of the [pagan] custom. But I believe they have been turned into an offering to His Divine Majesty" (Durán 1971:228).

So-called mundane objects, such as ceramics, also tied into a broader concern with the sacred. Everyday serving vessels were used as offerings in burials, the New Fire Ceremony, and the termination rituals that I described in Chapter 5. Durán wrote of pre-Columbian offerings of "little bowls" to the Aztec priests (Durán 1971). And, of course, everyday serving vessels were used in feasting and public ceremony (Rodríguez Alegría 2005). Studies outside of Central Mexico have shown that there is substantial overlap in the ceramic assemblages found in ritual contexts and everyday contexts (Brady and Peterson 2008). As well, and as the historical evidence cited earlier clearly shows, religious associations permeated every realm of life in the early colonial period. The perpetuation of specifically ritual ceramics of Indigenous tradition (see Chapter 6) and the diachronic comparison that I will present below indicate that Indigenous material culture had an important influence on the material culture of religious life, such as public celebrations at both sites.

It is frequently assumed that everyday objects had racial or ethnic meaning and that Spanish colonizers preferred to use European-tradition ceramics and prized Asian imports (Rodríguez Alegría 2005b provides a summary of this assumption). Historical evidence indicates that friars wished to set themselves apart from Indigenous subjects, whose "idolatrous" practices were potentially polluting. This was just one part of a new proto-racial boundary that emerged as a direct result of the colonial encounter: between "natives" "Indians," or "*naturales*" (naturals) on one hand, and Spaniards or "*gente de razón*" (people of reason) on the other (Aguirre Beltrán 1992, Burkhart 1990:364). As Burkhart noted, "the boundary between 'us' and 'them'… is more carefully maintained than the boundary between past and present, Pagan and Christian, for the survival or resurgence of those pagan customs remained, in the friars' discourses, an imminent possibility" (Burkhart 1990:365). As I will show below, however, the kind of distancing that Burkhart describes would have been virtually impossible at Tula.

In this chapter, I turn to everyday material culture, specifically examining ceramics, faunal bones, and macrobotanical remains to make two linked arguments. First, I argue that everyday objects (especially plants and animals) formed part of Spanish and Indigenous religious ontologies. Despite the friars' deep suspicions regarding Indigenous material culture, they were forced (by circumstance and because of Indigenous insistence) to adapt to that material culture. To do so, their own attitudes had to change, and Christianity itself was "colonized." Secondly, and relatedly, I argue that Indigenous material culture constituted an important part of Indigenous contributions and self-determination within the colonial religious world. Whether or not those contributions were intentional (see Chapter 1), they fundamentally shaped New World Catholicism. In other words, the colonial religious world was fresignified by both Spanish friars and Indigenous subjects. Indigenous subjects reformed the Christian rites according to their understandings and preferences. The friars did the same according to their own understandings. As I will show below, however, in the material world in Tula it was primarily the friars who had to do the work of resignification.

7.2 PREFACE TO CERAMIC DATA ANALYSIS

The Open Chapel site and Cathedral of San José site present some difficulty for comparative interpretation. My project was designed to understand the material culture of early colonial evangelization processes in diachronic perspective and in the *longue durée* occupation histories of both sites (particularly because the Cathedral of San José had not been previously excavated), but the different occupational histories present some analytical complications for comparing only the colonial occupations of the two sites. Looking at the total proportions of diagnostic ceramic sherds the two sites are obviously quite different. The Open Chapel's primary occupation appears to be Aztec-era (in Tula, equivalent to Fuego, Tesoro, and Palacio phases), while the Cathedral site appears to be primarily a Tollan-phase site (see Table 7.1 and Figures 7.1 and 7.2 below).

Temporality	Capilla Count	Proportion of total	Catedral Count	Proportion of total	Total Count	Total Proportion of total
Azteca	3656	86.59%	891	10.79%	4547	36.45%
Colonial	74	1.75%	1118	13.54%	1192	9.55%
Corral	16	0.38%	202	2.45%	218	1.75%
Formativo		0.00%	53	0.64%	53	0.42%
Modern		0.00%	17	0.21%	17	0.14%
Prado		0.00%	2	0.02%	2	0.02%
Tollan	476	11.27%	5971	72.34%	6447	51.68%
Grand Total	**4222**	**100.00%**	**8254**	**100.00%**	**12476**	**100.00%**

Table 7.1: Showing diagnostic ceramic sherds at the Open Chapel (*capilla*) and Cathedral (*catedral*) sites, by count and proportion of total count of diagnostics. The last two columns represent the cumulative totals and proportions, respectively, from both sites.

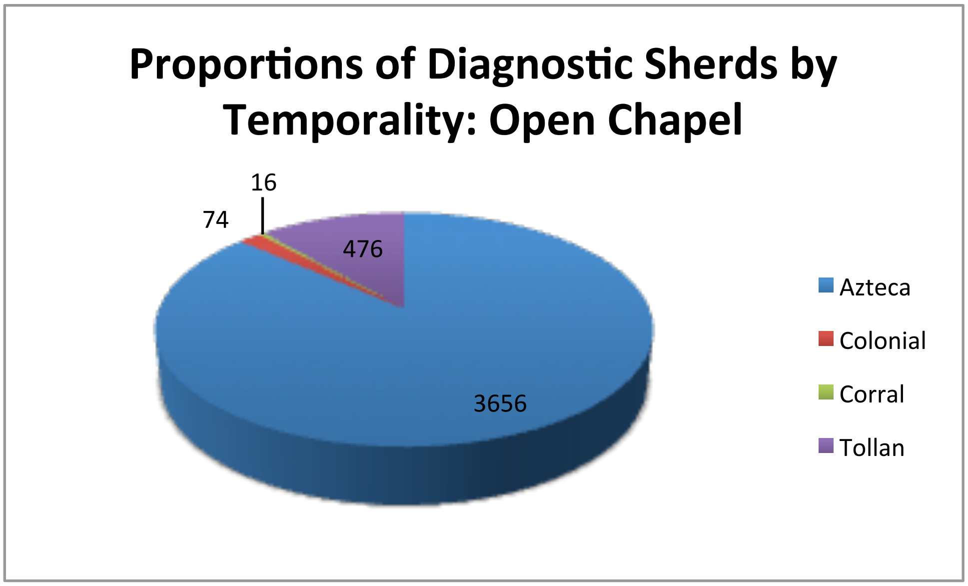


Figure 7.1: Graph showing proportions of diagnostic sherds by temporality from the Open Chapel.

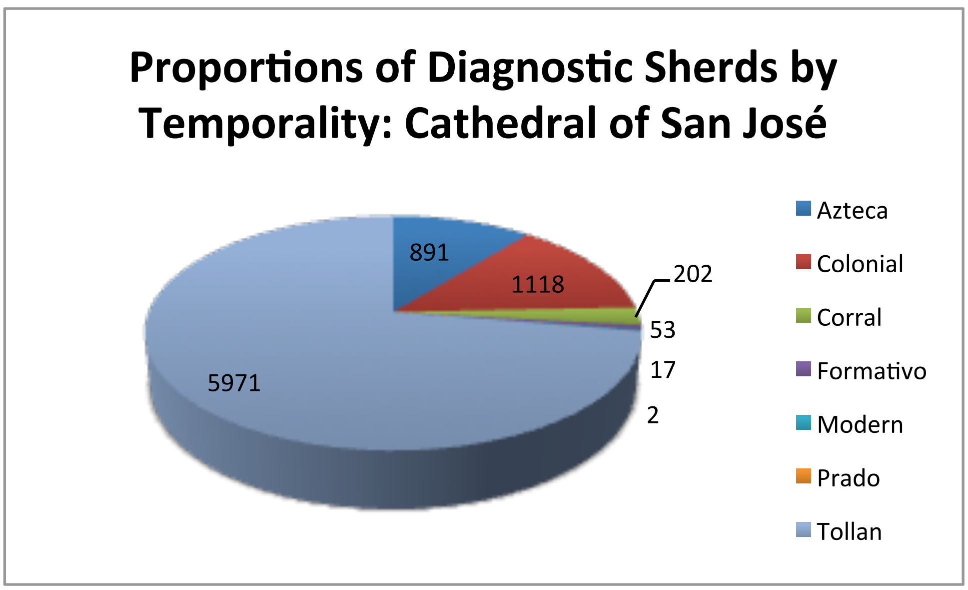


Figure 7.2: Graph showing proportions of diagnostic sherds by temporality from the Cathedral of San José. Note that sherds identified as formative are tentative, See Appendix A).

After their initial colonial-era occupations, the two sites had divergent uses for the next several centuries: the area surrounding the Open Chapel was used as *milpa* (low-intensity farming) agricultural land until it was protected as part of the Zona Arqueológica after Acosta's projects, according to local informants. The Cathedral, on the other hand, has functioned continuously as a regional religious center, first as a church and monastery and later as a Cathedral and headquarters of the Tula Diocese. Fully comparable contexts for my diachronic analysis, then, are those that represent the founding and initial early colonial use at both sites. At the Open Chapel site, I have determined that the most comparable contexts are those that seem to represent colonial levels in either primary refuse deposits or fill layers that underlie colonial-era floors, since these will have been minimally disturbed by historic or modern agricultural activities. At the Cathedral site, we have what appears to be a colonial-era surface in both excavation units (Operations 6 and 7) with some evidence of colonial-era mixed fill below. These levels are covered in both cases by an extremely compacted, almost cement-like fill that makes the initial colonial level easily identifiable (see Chapter 4). Though several of the large features in Operation 6 (the colonial-era burial and associated burial shaft, as well as the colonial fill layer, see Chapter 4) are clearly colonial as well, these are deposits that were most likely cut into the prehispanic platform and then re-deposited, meaning that they will inevitably contain disproportionate amounts of Tollan-phase ceramics, and are too disturbed for comparative purposes.

This last observation necessitates some explanation of general ceramic patterns at Tula. Specifically, it is important to note that Tollan-phase ceramics did not, on the whole, continue to be used during the Aztec era in Tula (Healan 2012:94-95). The Fuego (early Aztec, associated with Aztec Black-on-Orange I/II), Tesoro (late Aztec, associated with Aztec Black-on-Orange III/IV types), and Palacio (colonial, associated with glazed ceramics and late Aztec ceramics, as well as Black-on-Orange types with novel decoration) phases at Tula instead exhibit a discontinuity in ceramics. That is, Tollan-complex ceramics are replaced during these three phases with Aztec-complex ceramics found throughout the Basin of Mexico (Healan 2012:94-95). I cannot rule out the possibility that some Toltec artifacts found in Aztec- or Colonial-era deposits represent heirlooms or other antiquarian behavior, especially given the patterns of antiquarian offerings at the Templo Mayor (Umberger 1987). However, the high quantity of Tollan-phase ceramics in all post-Tollan-phase contexts at the Cathedral of San José (see Chapter 4, Operations 6 and 7) is probably best interpreted as a consequence of site formation processes that involved the constant reuse and redistribution of Tollan-era fills inside of an enormous Tollan-phase platform. For comparative purposes between the colonial-era remains, it is therefore reasonable to disregard Tollan-phase diagnostics and focus on ratios of colonial and Aztec-complex diagnostic sherds in specific contexts. The contexts that I have selected from both sites for comparative purposes are listed below (Table 7.2). In the two sections that follow, I proceed with a general analysis based on all contexts, followed by an analysis that only considers the colonial-era contexts included in Table 7.2.

In Section 7.4 below, I use the terms "increased" and "decreased." This is based on the idea that the Open Chapel was constructed in 1530 A.D. and then abandoned for ritual purposes (except possibly burials, which I did not excavate) around 1550 A.D. When I compare contexts that are exclusively colonial, therefore, I use "increase" to indicate a change from the Open Chapel to the Cathedral, and "decrease" to indicate an opposite diachronic change.

SITE	OPERATION	CONTEXT	CONTEXT TYPE
Open Chapel	1	3	Colonial floor (*tepetate*)
Open Chapel	1	12	Colonial sub-floor fill layer (with *tepetate* and adobe fragments)
Open Chapel	1	17	Colonial sub-floor fill layer (with *tepetate* and adobe fragments)
Open Chapel	2	11	Primary refuse pit, colonial (based on stratigraphy, chicken bone)
Open Chapel	3	5	Colonial floor fragment
Open Chapel	3	7	Colonial subfloor fill (with *tepetate*)
Open Chapel	3	13	Colonial subfloor *apisonado* (tamped earth surface)
Open Chapel	3	14	Primary refuse pit, colonial
Open Chapel	3	15	Colonial subfloor fill (with *tepetate*, adobe, and stucco fragments)
Open Chapel	3	16	Colonial subfloor fill (with *tepetate*)
Open Chapel	3	17	Colonial subfloor fill (with *tepetate*)
Cathedral	6	8	Original colonial atrium surface (soil)
Cathedral	6	9	Original colonial atrium surface (first *escombro* layer)
Cathedral	6	11	Continuation of Context 9
Cathedral	6	12	Continuation of Context 8
Cathedral	7	8	Original colonial atrium surface
Cathedral	7	9	Original colonial atrium surface
Cathedral	7	10	Original colonial atrium surface

Table 7.2: Contexts selected from the Open Chapel and Cathedral locations for diachronic comparison of the early colonial era. No contexts from Operations 4 and 5 at the Open Chapel were deemed appropriate for comparative purposes.

7.3 GENERAL CERAMIC ANALYSIS

Some initial observations regarding the two collections as a whole are notable. One important observation is derived from the relatively small majolica collection at the two sites. Majolica is a tin-enameled ware produced in several parts of Europe and brought to the Caribbean and Central Mexico by the Spanish (Deagan 1987:53-54, Fournier García 1990, Rodríguez-Alegría 2010:58). Majolica workshops were probably established by 1550 in Mexico City, while Puebla became a major majolica production center in the mid-seventeenth century and continues that tradition today (Deagan 1987:77-78).

The total number of majolica fragments from both sites is 23, or .18% of the total number (12,476) of diagnostic sherds from my 2013 Open Chapel and Cathedral excavations. Only five (.12% of the Open Chapel's total diagnostic collection) such sherds were recovered from the Open Chapel site; 18 (.22% of the total diagnostic Cathedral collection) were recovered from the Cathedral site. This is not a significant change, bearing in mind that the Cathedral site had a much more active role in public life for almost five centuries after its construction. Of those sherds that were identifiable, 100% were of Mexican origin, from production centers in Mexico City, Puebla, and Guanajuato (the latter was a nineteenth-century production site, see Cohen-Williams 1992, Deagan 1987:87-88). Only two majolica rim sherds were recovered from both sites; of these, one was so badly burned as to be unidentifiable, and the other did not match known colonial types and likely represented a late-historical (post-revolutionary) sherd[37].

There were only twenty examples of porcelain from the two sites. Of these, 10 samples were clearly modern serving wares (based on glaze and decoration). Another 10 were possibly colonial or republican, but indistinguishable within this category (by republican, I refer to the period between 1810, the beginning of the Mexican Independence,

[37] Readers may be interested to know that these data accord well with Enrique Rodríguez-Alegría's observations regarding the ceramic patterns of the church and central plaza in Xaltocan, in the northern Basin of Mexico. He found that majolica rim sherds made up less than 1% of all serving vessel rim sherds from four different excavation units in Xaltocan's main plaza (majolica total counts and densities were similarly insignificant; see Rodríguez-Alegría 2010:63).

and the present). Two sherds were possible examples of bone porcelain, manufactured in England and reaching peak popularity between 1886 and 1900[38].None of the examples exhibited the characteristic blue- or violet- tinted background glazes of early colonial Chinese porcelain (see Deagan 1987:97-101), nor did they exhibit the distinctive cloudy blue or red-and-gold decorations of colonial Japanese porcelain (Deagan 1987:101-102). Therefore, without being able to identify specific porcelain types, we can say that the porcelain from my excavations does not include examples of prized colonial Asian ceramics.

In sharp contrast, colonial ceramics from Structure K in Tula Grande, examined by Enrique Rodríguez-Alegría and myself in 2008, included a small sample (13 sherds) of majolica and porcelain. However, the 13 Structure K majolica and porcelain sherds represented a much broader sample of production centers; they originated from Spain, Italy, and China (Table 7.4). The early colonial population at Tula therefore certainly had access to majolica and porcelain types from Europe and Asia, but these types are not represented in my 2013 Open Chapel and Cathedral excavations. This is particularly unusual because Columbia Plain, an early Spanish type, is very common in Central Mexico as well as other parts of New Spain, and was present in an Aztec/colonial residence in Structure K in Tula Grande (Cohen-Williams 1992, Deagan 1987:56, Lister and Lister 1982:45).

[38] Based on the type collections at the Florida Museum of Natural History: https://www.flmnh.ufl.edu/histarch/gallery_types/about.asp

COLONIAL MAJOLICA FROM TULA'S OPEN CHAPEL AND CATHEDRAL, 2013 (dates after Deagan 1987)	
Production Center	*Date Range*
MEXICO CITY MAJOLICA	
Aucilla Polychrome (**1** sample, Op7 Cxt 5)	1650-1700 (1680-85 peak)
*Mexico City Common Grade** (**1** sample, Op 7 Cxt3, **1** sample, Op 7 Cxt 6)	1580-1650
Mexico City Blue-on-White (**1** sample, Op 5 Cxt2, **1** sample, Op 3 Cxt 2)	1700-1850
*Mexico City White (fine grade)** (**1** sample, Op 7 Cxt7)	1600-1760
San Luis Polychrome (**1** sample, Op 6 Cxt 4)	1650-1750
*19th Century Mexican Tradition Polychrome (see note)*** (**1** sample, Op 6 Cxt 4)	19th Century
PUEBLA MAJOLICA	
Puebla Polychrome (1 sample, Op 7 Cxt 4)	1650-1725
Puebla (general) (**1** sample, Op5 Cxt 4, **1** sample, Op7 Cxt 4)	17th and 18th centuries
Esquilitan Black-and-Green-on-Yellow (**1** sample, Op4 Cxt 7)	1800-1900
Esquilitan Black-on-Yellow (**1** sample, Op7 Cxt 5)	1800-1900
GUANAJUATO MAJOLICA	
Guanajuato Polychrome (**1** sample, Op 6 Cxt 7, **2** samples, Op 7 Cxt 6)	1850-1900***
UNIDENTIFIED (**1** sample, Op 5 Cxt 2; **1** sample, Op 6 Cxt 2; **2** samples, Op 6 Cxt 4; **3** samples, Op 7 Cxt 5)	

***Mexico City common grade majolica is separated into five types (Deagan 1987:72, Lister and Lister 1982); the samples here were unidentifiable except within this broader category.
**Sample was identified as a likely example of an unidentified Mexico-City tradition polychrome based on photographs from the Lister collection at the Florida Museum of Natural History; sample had a thick orange paste, thin white enamel, and a green and rust floral motif (e.g. FMNH 2015:Specimen 1764). This may be the type that Deagan (1987:89, Fig. 4.50a) identifies as part of the Nineteenth-Century Mexico City Tradition.
***See details in Cohen-Williams 1992, Deagan 1987:87-88

Table 7.3 Types, dates, and specimen details for all majolica recovered during the 2013 excavations at Tula's Open Chapel and Cathedral.

COLONIAL MAJOLICA FROM STRUCTURE K, TULA, HIDALGO		
Type	*Form*	*Date Range*
Mexican Majolica		
Mexico City Fine (unidentified blue and white type)	Plate (compound silhouette)	1540 and after
Puebla "Imitation porcelain"	Body sherd	1650-1750
San Luis Polychrome	Body sherd	1575-1650
Mexico City Fine (unidentified Blue on White type)	Body sherd	1540 and after
European Majolica		
Faenza Compendiario	Base	1550-1600
Columbia Plain	Body sherd	1492-1650
Columbia Plain	Footless base	1492-1650
Columbia Plain	Body sherd	1492-1650
Columbia Plain	Body sherd	1492-1650
Asian Porcelain		
Chinese Porcelain (Ming)	Body sherd	1550-1644
Japanese Porcelain	Annular base	1660 and after
Chinese Porcelain	Body sherd	1573 and after
Chinese Porcelain (Plain White)	Body sherd	1573 and after

Table 7.4 Colonial Majolica and Porcelain Ceramics from Structure K Residence in Tula Grande (Types and date ranges after Deagan 1987.)

Burkhart has argued that friars were able to rhetorically distance themselves from the practices and objects (processions, for example, or Indigenous musical instruments used in ritual) so that "borrowed elements, such as the musical instruments, could function both as ethnic markers and tools of native devotion in the new context" (Burkhart 1990:367). If this were the case, we would expect to find markers of Indigenous ethnic difference such as majolicas in some contexts (such as friars' quarters or sacristies) and not others (such as atria used for public ceremony). However, my research at the Open Chapel included an excavation unit directly adjacent to the sacristy, in which we found a colonial-era refuse pit (see Chapter 4, Operation 3, Context 14), which contained no majolica at all, either imported or locally produced. Burkhart (1990) specifies that she is talking about the friars' understandings of the objects used in the Indigenous (Nahua) church. Colonial Tula was a multi-ethnic community, despite having an overwhelmingly Indigenous population (see Chapter 1). That being the case, we might expect to find some evidence of prized European imports at both sites. However, we did not find any evidence of these imports at either the Open Chapel or the Cathedral site.

Perhaps we did not find prestigious ceramics because the friars had taken vows of poverty, which would account for the lack of imported ceramics at both sites, as has been argued by Thomas Charlton and Patricia Fournier (1993:213). However, vows of poverty did not preclude imported ceramics from showing up in colonial religious contexts in Mexico City, for example (Lister and Lister 1982, Fournier García 1990). A better explanation might be a question of access—that is, perhaps the communities in Tula did not have access to the same ceramic resources as did other communities. Charlton and Fournier (1993) have described the inefficient trade networks that circulated imported ceramic distributions in the early colonial period in Central Mexico. These uneven trade networks certainly led to uneven distribution from site to site- urban centers had far more access to prestigious imported ceramics than did rural contexts such as the Otumba region. But the ceramic evidence from Structure K show that people from Tula did, in fact, have access to these ceramics.

I thus argue that Indigenous subjects continued, as they had in the past, to perform celebrations using ceramics of their own tradition. From the evidence we have available from my excavations, it appears that the friars did not escape the "colonizing" force of this tradition. Of course, better comparative contexts (to understand the difference between the atrium and the friars' quarters at the Cathedral, for example) would confirm or disprove this hypothesis. What is quite clear, however, is that access was not a factor—rather, evolving Indigenous preferences within their own ceramic tradition informed the material culture of the religious world in Tula. I provide further evidence for this claim in the next section.

7.4 CERAMIC ANALYSIS BASED ON COMPARATIVE EARLY COLONIAL CONTEXTS

Type	Open Chapel Count	Proportion
Azteca	425	97.03%
Anaranjado monocromo	170	38.81%
B/O II	2	0.46%
B/O III	61	13.93%
B/O IV	15	3.42%
B/O misc	9	2.05%
B/O NI	36	8.22%
B/R	42	9.59%
B/R grafito	3	0.68%
BW/R	32	7.31%
policromo	5	1.14%
Rojo monocromo	50	11.42%
Colonial	13	2.97%
vidriado ambar	3	0.68%
vidriado verde	10	2.28%
Grand Total	**438**	**100.00%**

Table 7.5: Diagnostic Aztec-tradition and colonial sherds in early colonial contexts at the Open Chapel; counts and proportions include all sherd fragments (body sherds, bases, and rims)

Type	Open Chapel Count	Proportion
Azteca	171	98.28%
Anaranjado monocromo	54	31.03%
B/O II	2	1.15%
B/O III	42	24.14%
B/O IV	14	8.05%
B/O misc	1	0.57%
B/O NI	14	8.05%
B/R	18	10.34%
B/R grafito	3	1.72%
BW/R	15	8.62%
Rojo monocromo	8	4.60%
Colonial	3	1.72%
vidriado ambar	1	0.57%
vidriado verde	2	1.15%
(blank)		0.00%
(blank)		0.00%
Grand Total	**174**	**100.00%**

Table 7.6: Diagnostic Aztec-tradition and colonial sherds in early colonial contexts at the Open Chapel. Counts and proportions include only rim sherds.

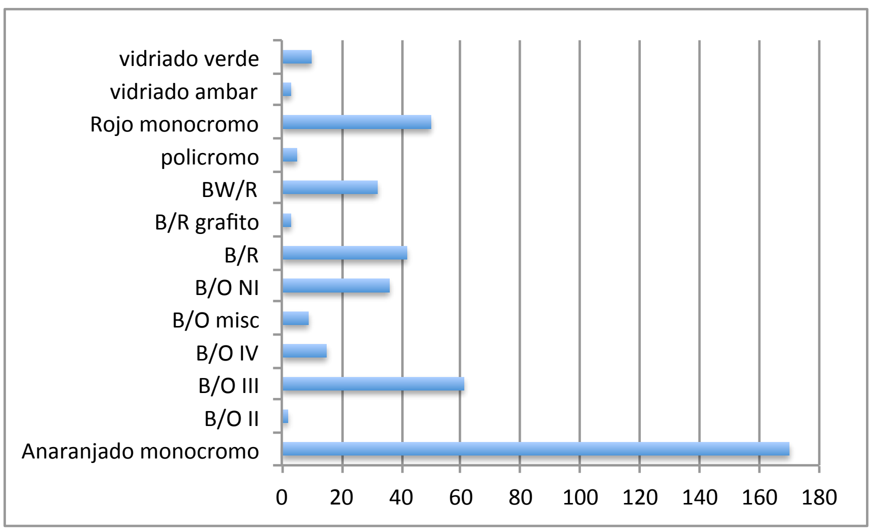


Figure 7.3: Diagnostic Aztec-tradition and colonial sherds in early colonial contexts at the Open Chapel. Count includes all vessel fragments (rims, body sherds, and bases).

Type	Cathedral Count	Proportion
Azteca	148	84.09%
anaranjado monocromo	46	26.14%
B/O II	3	1.70%
B/O III	8	4.55%
B/O IV	3	1.70%
B/O misc	1	0.57%
B/O NI	19	10.80%
B/R	25	14.20%
B/R grafito	4	2.27%
BW/R	14	7.95%
policromo	1	0.57%
Rojo monocromo	24	13.64%
Colonial	27	15.34%
vidriado ambar	18	10.23%
vidriado verde	9	5.11%
NI	1	0.57%
policromo	1	0.57%
Grand Total	**176**	**100.00%**

Table 7.7 Diagnostic Aztec-tradition and colonial sherds in early colonial contexts at the Cathedral of San José. Counts and proportions include all sherd fragments (body sherds, bases, and rims)

Type	Cathedral Count	Proportion
Azteca	50	89.29%
anaranjado monocromo	11	19.64%
B/O II	2	3.57%
B/O III	4	7.14%
B/O IV	2	3.57%
B/O NI	8	14.29%
B/R	7	12.50%
B/R grafito	2	3.57%
BW/R	5	8.93%
Rojo monocromo	9	16.07%
Colonial	6	10.71%
vidriado ambar	5	8.93%
vidriado verde	1	1.79%
Grand Total	**56**	**100.00%**

Table 7.8: Diagnostic Aztec-tradition and colonial sherds in early colonial contexts at the Cathdral of San José. Counts and proportions include only rim sherds.

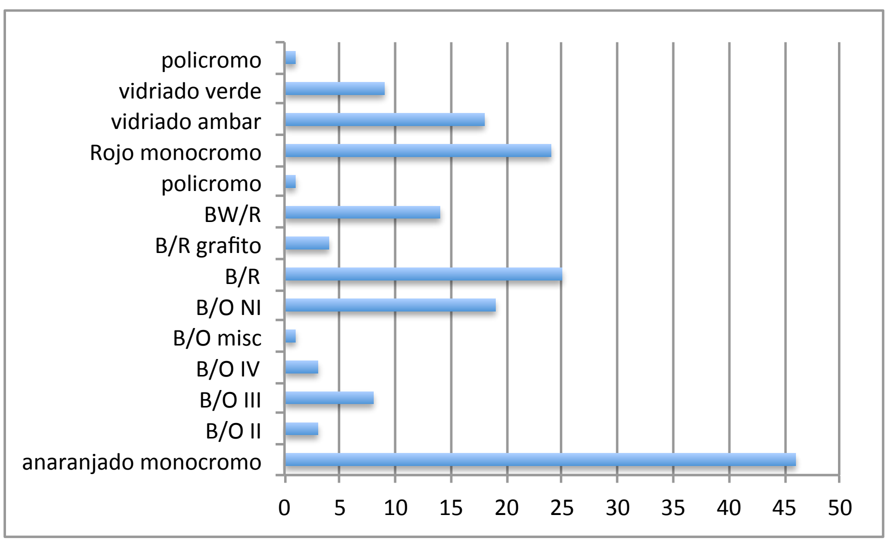


Figure 7.4: Bar graph representing counts of Colonial and Aztec-tradition serving wares in early colonial contexts at the Cathedral of San José. Count includes all vessel fragments (rims, body sherds, and bases). One polychrome sherd was identifiably Aztec, while the other was not identifiable except as pre-Columbian polychrome.

The comparative analysis of exclusively early colonial contexts at the Open Chapel and the Cathedral of San José reveals several important points that complement the more general analysis of the two sites in the previous section. First, no majolica or porcelain sherds *whatsoever* were present in the original colonial contexts at either site. This observation provides even more evidence to show that imported European ceramics did not form an important part of early colonial communal contexts at either site in the sample so far excavated.

It is also apparent that simple lead-glazed wares (glazed green or *vidriado verde*, and glazed amber or *vidriado ambar*) represent 100% of the European-tradition ceramics present at both sites in early colonial contexts. However, these ceramics were not likely imported wares, but rather locally (within Mexico) produced wares that incorporated glazing technologies that had been introduced by Europeans. Indigenous potters "produced lead glazed wares as this decoration became the favorite colonial innovation of this industry. However, the methods and goals of the potters were indigenous rather than Spanish" (Hernández Sánchez 2012:214). Though these types increase significantly from the Open Chapel site to the Cathedral site, they still make up only 15.34% of the total assemblage at the latter site and only 10.71% of rim sherds (see Tables 7.7, 7.8). That is, Aztec-tradition types are still far more popular in the early colonial contexts at the Cathedral. In addition, Indigenous potters embraced glazes in the early colonial era; the resulting ceramics were colonial innovations, rather than imitations of European types. Glazed forms in my sample included jars, dishes, bowls, and cooking vessels such as *ollas*.

Other important changes are evident between the short colonial use of the Open Chapel and the earliest years of the Cathedral. At both sites undecorated plain orange (*anaranjado monócromo*) vessels make up the greatest majority of serving wares. At the

Open Chapel, the next greatest majority is composed of Aztec-tradition Black-on-Orange sherds, particularly Black-on-Orange III.

At the Open Chapel, Aztec-tradition Black-on-Orange sherds comprise 28.08% of the total serving ware assemblage and 41.96% of rims, while these decrease in the Cathedral location to 19.32% of the collection and 28.57% of rims. One large sherd encountered at the Open Chapel is evidence of the new naturalistic decorative motifs that were applied to Aztec Black-on-Orange IV sherds in the Colonial era (see Figure 7.5). Another popular Indigenous-tradition type, Aztec Black-and-White-on-Red, decreases slightly but is still present in the earliest colonial contexts at the Cathedral location (see Tables 7.7, 7.8). Indigenous-tradition polychrome types were present but not common at either site; these comprise 1.14% of the total assemblage at the Open Chapel and 1.14% of the total assemblage at the Cathedral.

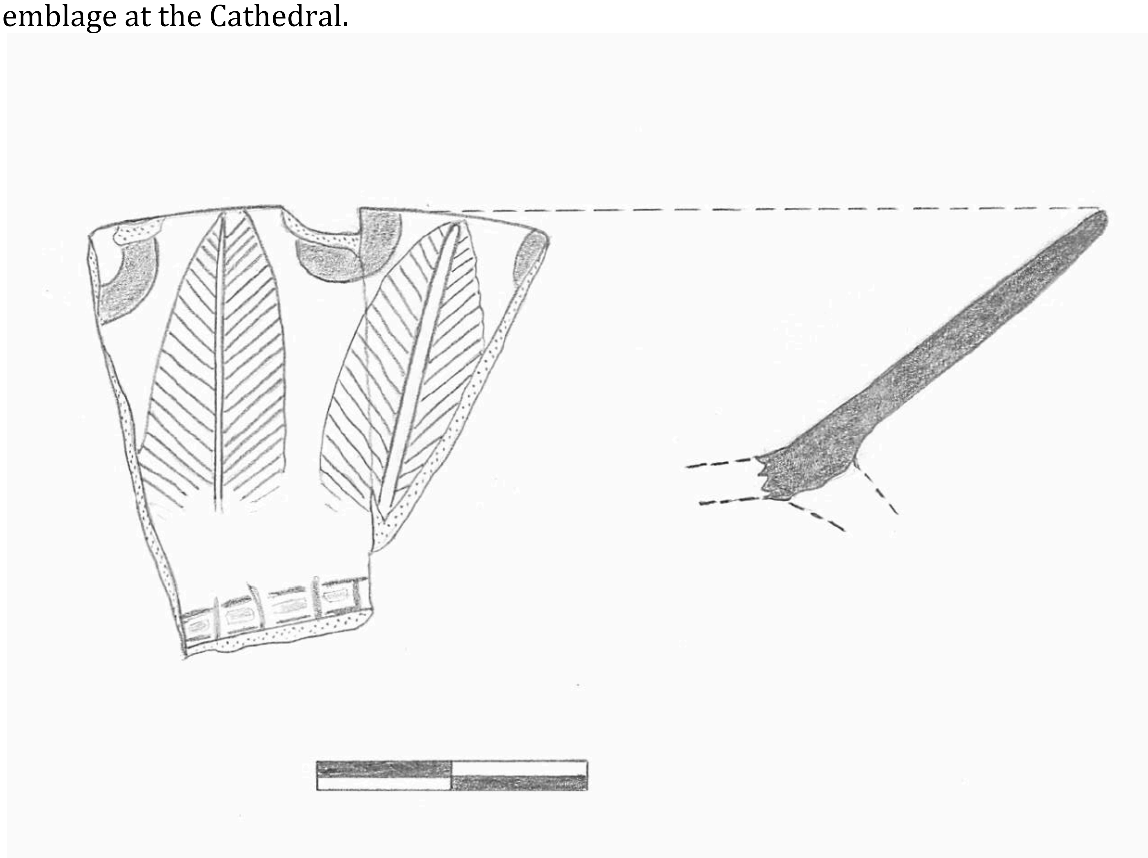


Figure 7.5: Colonial Aztec IV Black-on-Orange *molcajecte* (mortar).

On the other hand, other Indigenous-tradition wares *increased* as the early colonial period progressed. For example, Red Ware (*rojo monócromo*) made up 11.42% of total servingware types and 4.6% of rims at the Open Chapel, while at the Cathedral these made up 13.64% of all sherds and 16.07% of rims. Another Aztec red ware, Aztec Black-on-Red, is represented in the charts above in two forms. "B/R" is Black-on-Red with plain black paint, while "B/R grafito" is similar but decorated with a paint that includes shiny flecks of a graphite-like mineral (Hernández Sánchez 2012:115). Both types increase slightly at the Cathedral location.

These findings are, in general, consistent with Gilda Hernández Sánchez's observations regarding ceramic patterns in the early colonial era (2012:149-153). That is, Aztec Black-on-Orange types persisted in the colonial era, acquired new decorative motifs, and decreased in popularity, while red wares increased in popularity. In the diachronic perspective of the two early colonial contexts, however, we can observe that this trend is just beginning; Black-on-Orange rims are still by far the most common decorated type even at the later Cathedral site (they comprise 28.57% of rims, vs. 10.71% of glazed types).

My expectation, given the very different architectural patterns at both sites, as well as the increase in resident friars after the construction of the Cathedral of San José, was that we would find a greater divergence in artifact assemblages between the two Franciscan sites. In other words, I expected that Spanish institutionalized religion, as it increased its focus on "genuine" conversion, would implement more Spanish material culture in both ritual and the parts of everyday life with which it intersected (the broader religious world). As noted earlier, friars were suspicious of Indigenous material culture, as paganism was always ready to "pollute" their faith.

Instead, the differences appear to be changes that reflect evolving Indigenous preferences and production techniques that originated in the pre-Columbian world and gradually evolved in the new Christian context. It is possible that the friars at Tula's monastery (the Cathedral) used imported European and Asian ceramics that are present in greater quantities elsewhere at the site, in currently inaccessible locations. However, the assemblage from the atrium is likely the result of public communal deposits built up over time—very likely in part from feasting and celebrations—and these indicate a very strong preference for Indigenous ceramics, a growing interest in the novel glazed decoration, and a complete absence of majolicas and porcelain until the later colonial period. Even when these were eventually adopted, they were produced in Mexico, rather than imported from elsewhere, in stark contrast to a colonial-era residence in Tula. At religious sites in Tula, the diachronic ceramic analysis shows that Indigenous preference—rather than prohibitions or preferences dictated by institutional Spanish religion—drove ceramic change.

As noted earlier, another explanation favored by some archaeologists for the paucity of European imports in colonial religious sites is that friars favored Indigenous ceramics because of their vows of poverty (Charlton and Fournier 1993:213). The implication of this argument is that Indigenous ceramics, regardless of type, were in no case considered to be an elite or expensive material. I argue that this view fails to account for clear Indigenous preferences in ceramic production, use, and consumption. This argument is especially tenuous given recent research that shows that elite Spanish subjects in *La Traza* in Mexico City prized red wares (Rodríguez-Alegría 2005b), and these wares were specifically requested by colonial political elites (Hernández Sánchez 2012:148). Given this research, the best explanation for ceramic change in the religious sites at Tula seems to be Indigenous preference rather than friars' vows.

Ceramics, of course, intersect with foodways, or cultural practices that surround the preparation, attitudes, practices, and consumption patterns surrounding food (e.g. Franklin 2001). Spanish colonialism introduced novel plants (such as wheat, chickpeas, and grapes) and novel livestock (such as cows, horses, pigs, goats, and chickens). The environmental impact of these introductions has been analyzed in studies whose findings are contradictory (Melville 1997, Sluyter 1998). As well, indigenous foods, especially those used in ritual feasts, had strong religious dimensions. For the purposes of this study, I wanted to understand whether novel Spanish introductions made up a large portion of the early colonial diet, and whether these changed over time. The preliminary results of that analysis follow.

7.5 RESULTS FROM FAUNAL ANALYSIS

All bone was collected and catalogued from all contexts in all excavation units. Preliminary identification of faunal materials was conducted by Eira Atenea Mendoza, an osteologist and faunal analyst. I have conducted preliminary analysis of her findings, and that analysis is presented in what follows. Elements that were concluded to be human remains were labeled with the taxa identification Number 1, and are not included in this report. However, some remains were so fragmentary as to be unidentifiable even in the broadest human/non-human identification, and these unidentified specimens are represented in the tables and graphs below. The category "large mammal" includes large species of European origin such as cows and horses. Bones classified as "animal" were not identifiable other than that they were non-human.

COUNT AND PROPORTION OF NON-HUMAN TAXA:

OPEN CHAPEL

Taxa	Count of Taxa	Proportion
Chicken	29	19.73%
Turkey	13	8.84%
Dog	19	12.93%
Deer	1	0.68%
Rodent	9	6.12%
Not identifiable	16	10.88%
Animal	37	25.17%
Large Mammal	2	1.36%
Bird	16	10.88%
Domestic Cat	5	3.40%
Grand Total	**147**	**100.00%**

Table 7.9: Showing taxa by count of individual bones (column 2) and taxa by proportion of all non-human taxa at the Open Chapel (column 3). Note that the domesticated cat was not consumed; it was found in a deliberate burial that was cut into a colonial floor in Operation 1 (see Chapter 4).

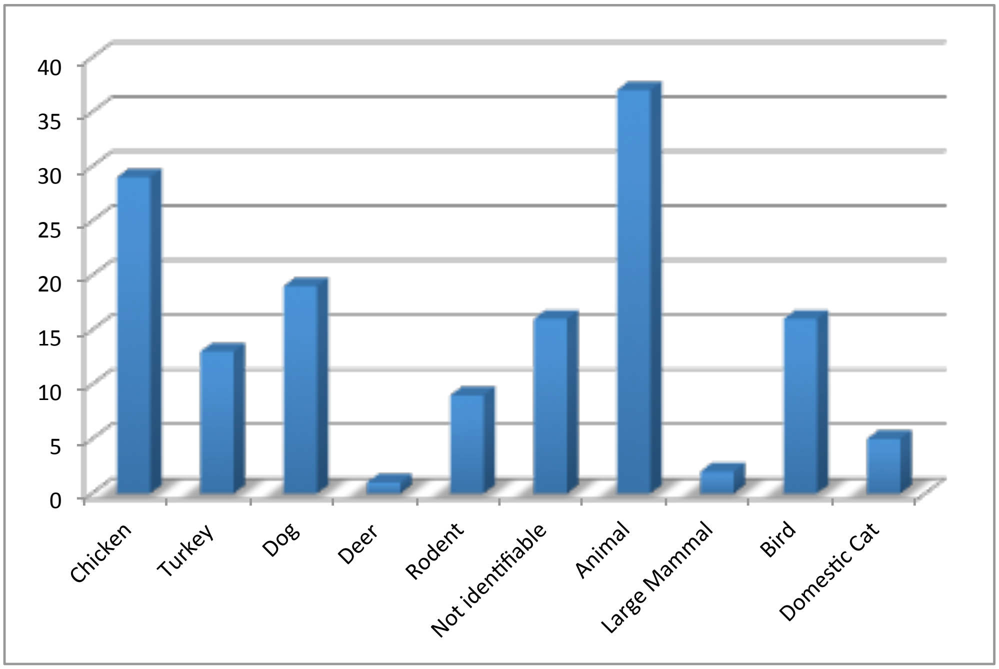


Figure 7.6: Graph showing counts of non-human taxa at the Open Chapel. The information is identical to that found in Table 7.9. Note that the domesticated cat was not consumed; it was found in a deliberate burial that was cut into a colonial floor in Operation 1 (see Chapter 4).

COUNT AND PROPORTION: CATHEDRAL

	Values	
Taxa	**Count of Taxa**	**Proportion**
Chicken	3	0.30%
Mexican Turkey	5	0.99%
Dog	7	1.73%
Deer	19	5.63%
Rodent	47	16.25%
Not Identifiable	120	47.43%
Animal	37	16.45%
Large Mammal	19	9.39%
Shell	1	0.54%
Pig	2	1.28%
Grand Total	**260**	**100.00%**

Table 7.10: Table showing taxa by count (column 2) and proportion (column 3) at the Cathedral of San José.

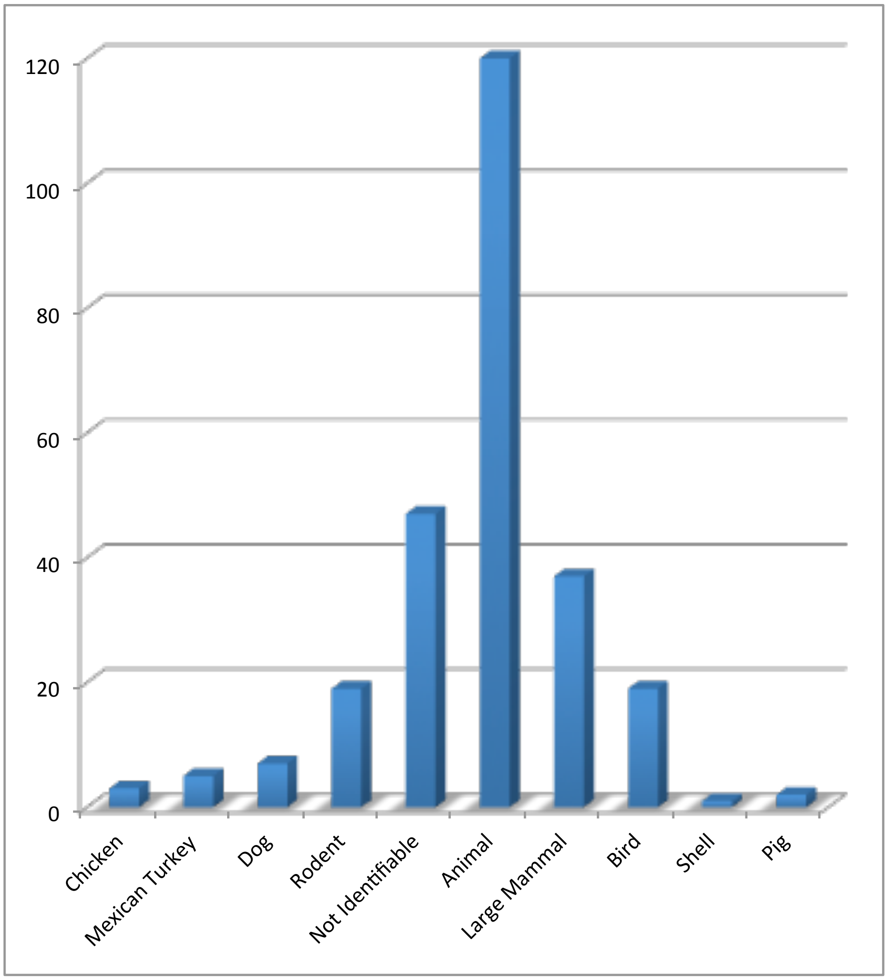


Figure 7.7: Graph showing counts of non-human taxa at the Cathedral of San José. The information is identical to that found in Table 7.10.

From this preliminary picture, we may observe that several species that are non-indigenous to the New World are represented in some quantity at the Open Chapel. After non-identifiable animal remains, domesticated chicken makes up the largest proportion (19.73%) of the non-human animal collection from my 2013 Open Chapel excavations. *Gallus gallus domesticus* (chicken) is thought to have been domesticated around 4,000 B.P. in Southeast Asia from the wild Red Junglefowl species; the domesticated *Gallus gallus* reached Iberia via Phoenician traders by the first millennium B.C. (Storey et. al. 2012). This species makes up a relatively small proportion of the faunal collection of the Cathedral, however (1.15% of the total non-human sample). This animal, like other old-world animals imported to the New World, had religious metaphorical significance to Christians as a protective animal: "Jerusalem, Jerusalem, you who kill the prophets and stone those sent to you, how often I have longed to gather your children together, as a hen gathers her chicks under her wings, and you were not willing" (Matthew 23:37, see also Luke 13:34).

The Mexican domesticated turkey (*Meleagris gallopavo*) also forms part of colonial contexts. Turkeys were domesticated in central Mexico, perhaps as early as 800 B.C. (Thorton et. al 2012:e42629). They were used for food, "but were also important sacrificial offerings, and their feathers, bones, and other byproducts were used to produce medicine, fans, tools, musical instruments, and personal adornments" (Thorton et. al 2012:e42629). Turkey was a very important animal for making offerings to the gods at neighborhood temples (Sahagún 1997:70). Deer, quail, and turkey formed part of tributes (Moran 2007:61). Indigenous enthusiasm for European chickens may have been due in part to the enthusiasm for this fowl. The friars also reinterpreted the native turkeys as analogous with chickens (see Motolinía 1985:258).

Another Spanish introduction, the domesticated pig (*Sus scrofa domestica*) is not present at all at the Open Chapel location, and makes up a relatively small portion of the Cathedral assemblage. An analogous animal, the New World peccary (*Tayassu pecari*) was indigenous to Mexico (Coe 1994) and formed part of the Mesoamerican diet as well as Maya ritual (Pohl 1981). Mary Pohl (1981) provides evidence that the imported pig and the new world peccary were analogous in ritual (the former was eventually substituted for the latter), based on modern Maya ritual practice; the same substitution occurred between native deer and Spanish bulls.

The broad category of "large mammal" increases sharply at the Cathedral. Though this category is not further subdivided, this pattern may imply a heavier reliance on large, imported European livestock than at the Chapel location. Of note is the fact that deer remains increased at the Cathedral location, as did rodent remains (the rodent category includes *tuzas*, which were consumed in the pre-Columbian world: see Pilcher 1998:24). However, this broad comparison is subject to the same analytical problems as the broad ceramic comparison above, that is, the Cathedral is a site with a majority of Tollan-phase remains, and with a much more intense colonial and post-colonial occupation. The overall increase in deer remains could be attributed to a greater Tollan-phase use, rather than a colonial use of the animal. As well, *tuzas* are burrowing animals and their increased presence may be due to this behavior rather than human consumption.

Domesticated dogs were also consumed in pre-Columbian Mexico. Many dogs wander freely in present-day Tula, and thus their presence in the archaeological record may in many cases be the result of their general presence. However, only one specimen (of 24 recovered from both sites) showed evidence of thermal exposure, and none had visible butchering marks, according to Mendoza's analysis.

Below, I present the data using the same comparative contexts as used in the diachronic ceramic analysis in the previous section.

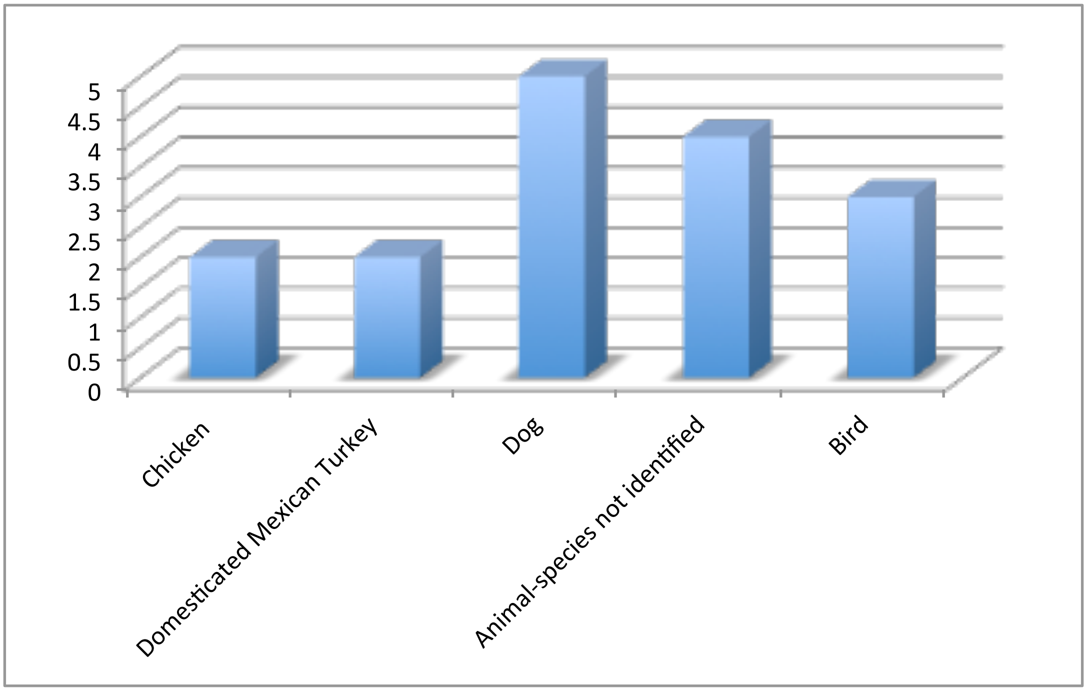


Figure 7.8: Taxa in diachronic comparative early colonial contexts at Tula's Open Chapel

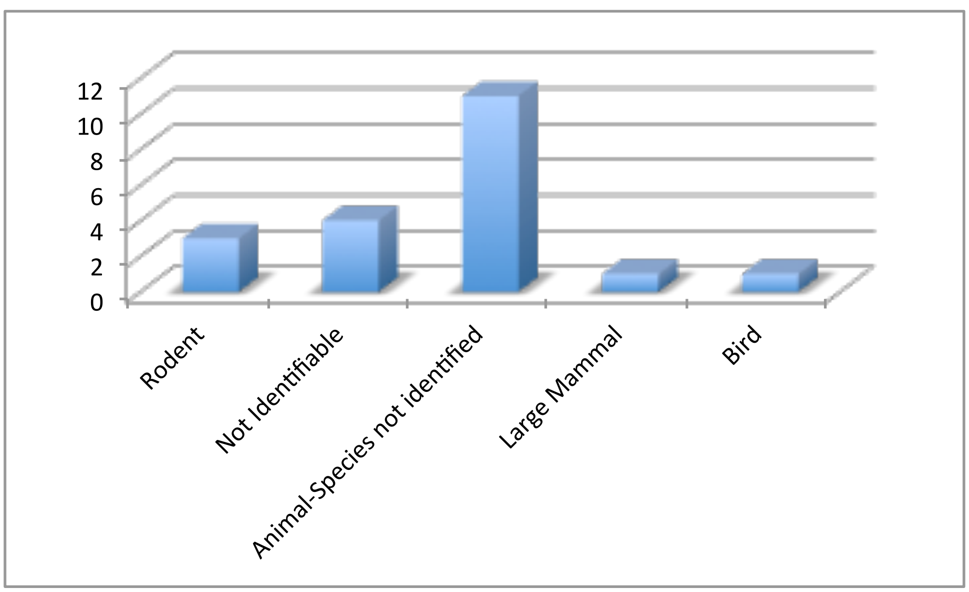


Figure 7.9: Taxa in diachronic comparative early colonial contexts at Tula's Cathedral of San José.

Unfortunately, the diachronic contexts in this case reduce the data to an extremely small sample size, and only provide hints of the early colonial diet. Of particular note in this diachronic analysis, however, is the variety of foodstuffs in colonial contexts at the Open Chapel, as well as the presence of two meat sources that were popular in the pre-Columbian world (turkey and dog). The majority of faunal bones at the Cathedral location were not identifiable. In addition, absent primary refuse deposits, it is impossible to tell whether the rodent remains encountered at the Cathedral were consumed, or further, whether they may have simply been part of Tollan-phase fill. In contrast, primary refuse deposits do form part of the comparative contexts utilized from the Open Chapel.

Preliminary results, then, suggest a general trend in which European and native fowl were consumed simultaneously, with perhaps an increasing preference for larger imported European livestock. Pig is not present in significant quantities at either site. However, European imported animals were taken to be analogous to indigenous species, and vice versa (e.g. Motolinía 1985:258, Pohl 1981). Both cultures' foodways thus underwent processes of resignification as they redefined novel material culture. These results are preliminary and limited, but I have presented them here in the interest of beginning to ameliorate the paucity of faunal data from colonial contexts in New Spain.

7.6 RESULTS FROM MACROBOTANICAL ANALYSIS:

Soil samples of approximately 5 liters were taken from all contexts deemed to be features: for example, primary refuse pits. We also collected soil from contexts that contained ash, as well as from fill layers from which macrobotanical remains might serve as an additional line of evidence. We collected 34 soil samples from the Open Chapel (a location at which we also identified many more features, see Chapter 4), and 14 samples from the Cathedral. In fall 2013, I contracted a team to complete the flotation; Pascual Correa, who has worked with the INAH team at Tula to complete previous macrobotanical analyses, was in charge of the flotation. América Martínez Santitlán completed the analysis and a report on the materials, which I present in part here. Ms. Martínez Santitlán and Alberto Villa Kamel also helped to provide access to the laboratories at ENAH (Mexico's National School of Anthropology and History), where we were generously permitted to use specialized equipment to photograph the remains (presented in part in Figure 7.12 below), which were often microscopic and therefore impossible to photograph with standard equipment.

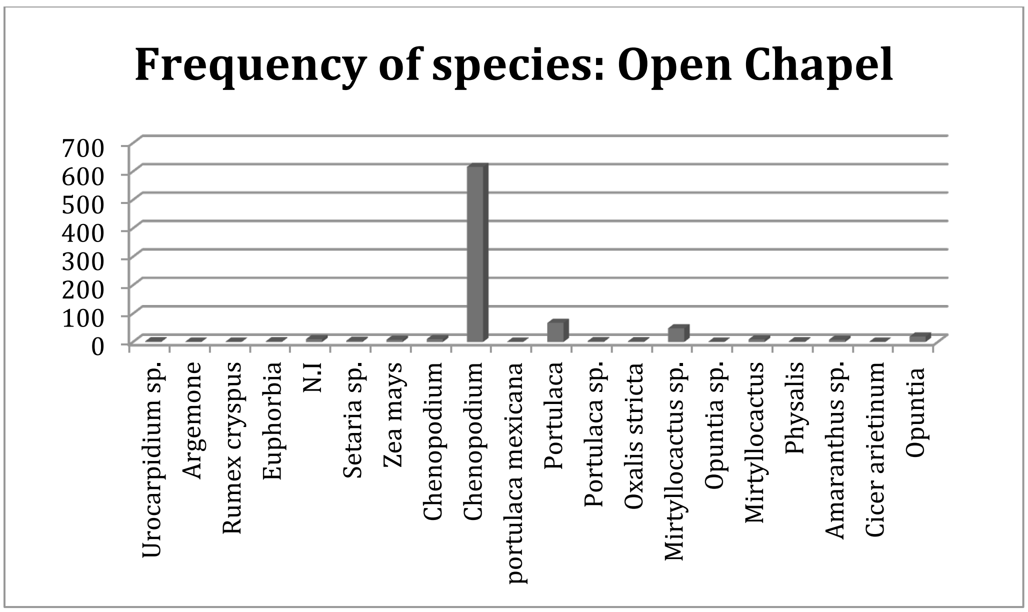


Figure 7.10: Frequency of species encountered in all contexts at the Open Chapel. Graph created by América Martínez Santitlán. Quelite cenizo (*Chenopodium murale*) is by far the most frequent species at the site.

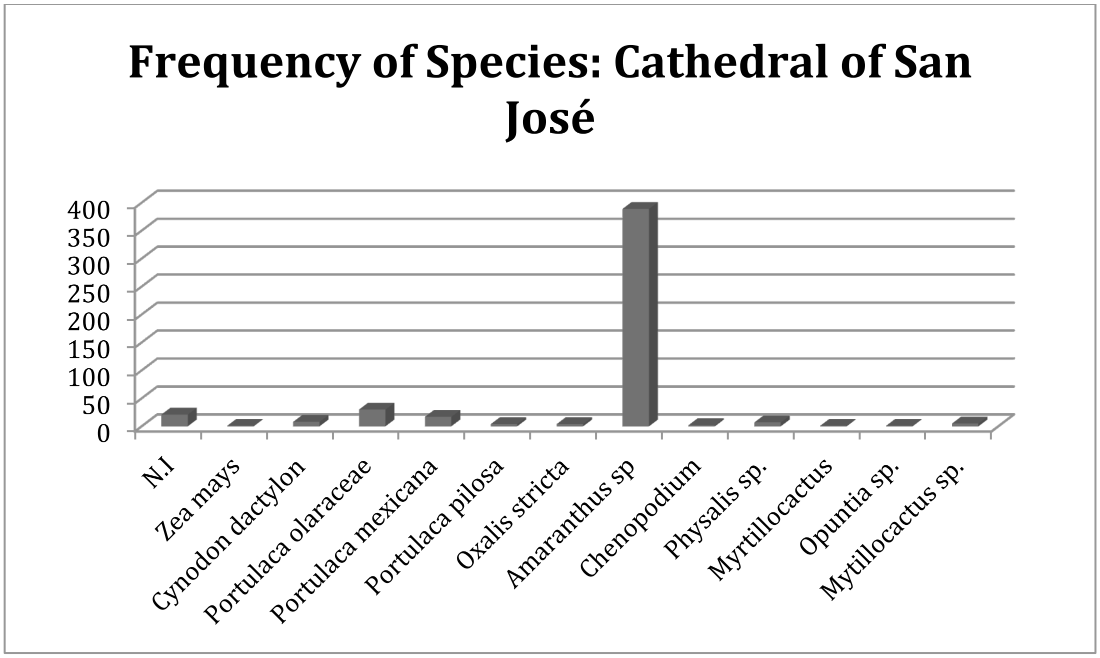


Figure 7.11: Frequency of species encountered in all contexts at the Cathedral. Graph created by América Martínez Santitlán. Amaranth is by far the most frequent species at the site.

OPERATION	CONTEXT	FAMILY	Genus/Sp.	COUNT
2	11	N.I	N.I	3
2	11	Gramineae	Zea mays	3

Table 7.11: All species encountered from comparative contexts (see previous sections) at the Open Chapel (table created by the author).

OPERATION	CONTEXT	FAMILY	Genus/Sp.	COUNT
7	9	Gramineae	Zea mays	1
7	9	Gramineae	Cynodon dactylon	8
7	9	Portulacaceae	Portulaca mexicana	14
7	9	Amarantaceae	Amaranthus sp.	49

Table 7.12: All species encountered from comparative contexts (see previous sections) at the Cathedral of San José (table created by the author).

NAME	USES	UTILIZED PORTIONS OF PLANT	TYPE OF PLANT
Biznaguilla [Blueberry cactus] *(Myrtillocactus sp.*)	Edible	Fruit	
Garambullo [Blueberry cactus] (*Myrtillocactus geometrizans*)	Edible*	Fruit	
Nopal (*Opuntia sp.*)	Edible	Leaves and fruit	
Epazote (C*henopodium ambrosiodes*)	Edible (condiment)	Leaves and fruit	Ruderal
Quelite cenizo (*Chenopodium murale*)	Edible	Leaves	Ruderal
Setaria sp.	Animal feed		Ruderal and weedy
Maíz [Corn] (*Zea mays*)	Edible, medicinal, and used for animal feed	Silk, fruit, and husks	Cultivated
Oxalis stricta	Possibly edible		Ruderal and weedy
Verdolaga [Pigweed] (*Portulaca olaraceae*)	Edible	Leaves	Near bodies of water, ruderal and weedy
Verdolaga *(Portulaca sp.*)	Edible	Leaves	Near bodies of water, ruderal and weedy
Hierba del pujo [Kiss-me-quick or Hairy pigweed] (*Portulaca pilosa*)	Medicinal	All	Near bodies of water, ruderal and weedy
Tomate [green tomato] (*physalis sp.*)	Medicinal and edible		Ruderal and weedy
Garbanzo [Chickpea] (Cicer arietinum)	Edible	Grain	Cultivated

Table 7.13: Types and uses of botanical specimens commonly used by humans found in soil samples at Tula's Open Chapel and Cathedral, created by América Martínez Santitlán. "Ruderal" refers to plants that colonize disturbed soils. Garbanzo (*Cicer arietinum*) represented the sole imported species encountered from either site.

The general comparative view of the two sites indicates that a plant known in Spanish as *Quelite cenizo* (*Chenopodium murale*) is by far the most common species at the site, while amaranth (*Amaranthus sp.*) makes up a vast majority of the specimens encountered at the Cathedral. *Quelite cenizo* is a wild plant utilized in traditional Mexican cuisine for its seeds and leaves (Chenopodium species are used to make the traditional Mexican dish *huazontle*); it is very common in disturbed soils throughout Mexico, such as at the edges of agricultural fields. Amaranth is a protein-rich seed that made up a substantial part of the pre-Columbian diet (Coe 1994).

In general, Ms. Martínez Santitlán observed that both sites exhibited the same types of plants in varying quantities, and all were native to Mexico with the exception of the sole burned garbanzo from Operation 2, Context 9. This contrasts sharply with the findings from the preliminary faunal analysis; in both cases traditional pre-Columbian foods are present but Spanish animal foodstuffs of European origin are immediately mixed with these foods at the start of the colonial era, while all plant foods represented a the two sites are of pre-Columbian origin, with a single exception of the garbanzo. We found several examples of corn (*zea mays*) that was slightly charred at the Open Chapel, but we did not find this species at the Cathedral. This is probably due to the presence of primary refuse deposits at the Open Chapel, while we have not found these at the Cathedral.

As was the case for faunal analysis, the comparative contexts for diachronic analysis were not very conclusive for macrobotanical evidence. Only one context from each site could be included; at the Open Chapel this was the primary refuse deposit (Operation 2, Context 11). At the Cathedral this was the colonial-era atrium surface in Operation 7 (Context 9). At the former, the small sample indicates the prevalence of corn (*Zea mays*), but this was a very small sample. Nonetheless, several of the *Zea mays* specimens showed evidence of burning. At the latter, the dominant prevalence of amaranth is consistent with the site's total sample, and corn is still represented (one sample).

A notable absence from this collection is wheat, which was (along with wine and olive oil) a major demand of colonial Spaniards in the new world; bread was a dietary staple throughout Spain at the time (Chevalier 1963). Wheat was also of seminal importance to Christians, of course; bread is Christ's body and its use in the sacrament of the Eucharist represents the fundamental moment of Christianity: the self-sacrifice of Christ (see Matthew 22:26). It was also treated as a revered food by European peasants; Sophie Coe notes that Europeans commonly used and disposed of bread in ways befitting a sacred object (Coe 1994:10). Córdova Tello (1992) has noted that part of the rationale for creating a new, ordered town as part of a *reducción* program in Huejotzingo, Puebla was to have a new town location on flat land that would be amenable to growing wheat. A similar explanation could be posited for the geographical change from the Open Chapel to the Cathedral location in Tula, since the latter site is located in an area that is much more flat than in the hills north of the Tula river. However, if wheat production did occur on a large scale after the 1550s at Tula, it is not present in the excavations so far conducted at the Franciscan sites. As well, scholars have noted that despite the importance of this crop to Spanish authorities, it largely failed to take hold as a successful agricultural venture (Chevalier 1963:52). Indigenous subjects were initially required to grow wheat alongside maize in the earliest years of the colony, but Indigenous peoples either would not or could not comply (Chevalier 1963:52). Their general attitude toward European food appears not to have been enthusiastic: after trying Cortés' food, Indigenous informants said that "their food was like fasting food" (Durán 1950-82, book 12, pp. 15-16, quoted in Moran 2007:170). Instead, data show that corn and amaranth continue to be the staple crops in the early colonial era in Tula.

Corn and amaranth both had deep religious significance, just as bread and wheat had to Europeans, an analogy that the Spanish recognized (Coe 1994:9). The Maya believed that the gods attempted to make people out of several different materials, but only when they were made out of corn did they finally become human beings (Coe 1994:9). Aztec myth described the god Queztalcoatl (the feathered serpent) acquiring corn from "Food Mountain" by turning himself into a black ant (Moran 2007:22). During the festival *Huey tozoztli*, a time of "The Taking of the God of Maize," people everywhere gathered corn, brought it to their houses, and made offerings to it; the next day it was gathered and brought by young women to the temples (Sahagún 1997:58). Corn was allowed to "rest" during the festival of Atamalcualiztli, during which tamales made only with corn and water were eaten, in order to allow the corn time to recover from the constant torments of being mixed with salt, saltpeter, lime, and chili (Sahagún 1997:69). Tamales made of green amaranth seeds were also eaten during festivals (Sahagún 1997). Perhaps the most significant religious connotation of amaranth was its use in making miniature *ixtlapas* or representations of gods that would then be sacrificed and consumed amongst as many people as possible (Clendinnen 1991, Coe 1994:41), a ritual use of which Spanish friars were aware (Durán 1971:203). In fact, Durán (1971:147) found compared amaranth to bread: "[the game] was eaten with much reverence and pleasure, together with *tzoalli* bread, which—as I have remarked—is a bread made of amaranth seeds, much like our own rye bread." These seeds are still mixed with honey to form skulls for the Day of the Dead festival in modern Mexico (Brandes 1997), and for common candies known as *alegrías* (see Coe 1994:41).

Several of the plants that we encountered at the Franciscan sites, listed in Table 7.34 above, were used for medicinal purposes as well as daily consumption. For example, *nopal* (cactus leaf) was commonly eaten in pre-Columbian Mexico and is still consumed throughout the country today. But its roots were also used by Aztecs for healing broken bones (Berdan 2014:248). Chenopodium murale is used in traditional Mexican medicine to treat dysentery (Alanís et al. 2005), the affliction that most often killed children in the pre-Columbian world (Berdan 2014:250). Tomato, chili, and other common foods were also used as medicine (Moran 2007:83). There were also many cures that utilized native herbs (e.g. Sahagún 1997:281-294), many of which have proven to be scientifically efficacious

(Berdan 2014:251, Alanís et al. 2005). Mesoamerican medicinal practices were inextricably bound with religious practice, and a cure could utilize anti-sorcery measures in addition to plant-based practices (Berdan 2014:245-252, see Sahagún 1961:139-163 for specific ailments and cures). The friars apparently used and admired Indigenous medicine as well: "There are some [healers] with so much experience, that many old and grave illnesses that the Spanish have suffered for long days without remedy, which these Indians have cured" (Motolinía 1985:258, my translation).

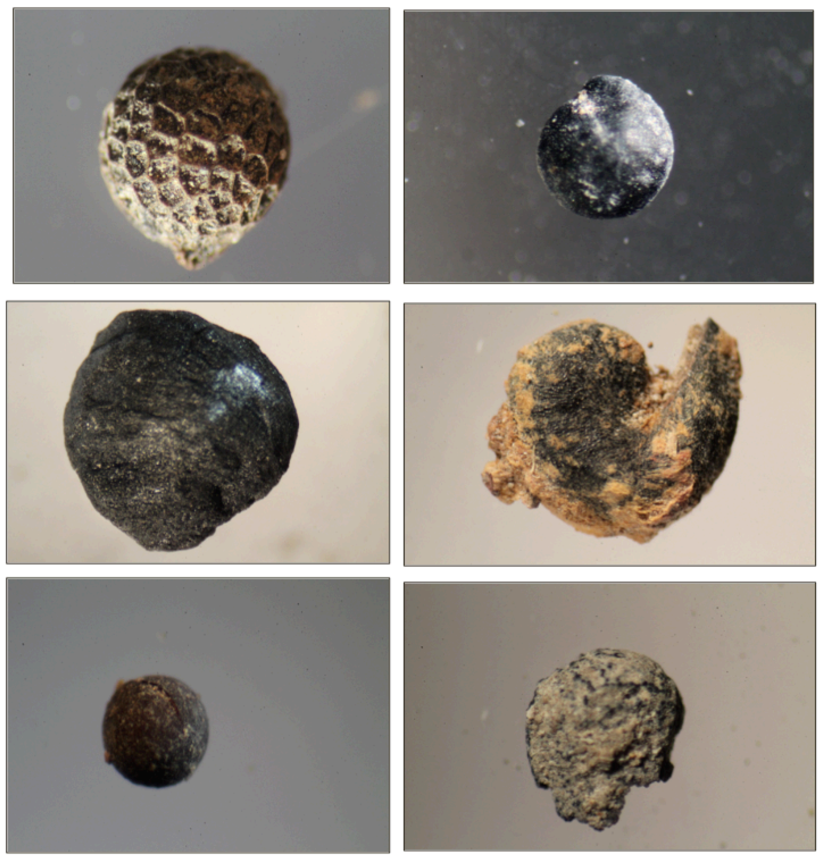


Figure 7.12: Macrobotanical specimens. Top left: *Argemone ochloreuca*. Length: 1771 microns; width 1607 microns at 2.5 magnification. Top right: *Chenopodium murale*. Length 1194 microns; width 1154 microns at 2.5 magnification. Middle left: *Cicer arietinum*. Length 5674 microns; width 5256 microns at .67 magnification. Middle right: *Opuntia.* Length 3069 microns; width 2592 microns at 1.5 magnification. Bottom left: *Amaranthus sp*. Length 500 microns; width 525 microns at 4 magification Bottom right: *Myrtillocactus.* Length 1318 microns; width 1195 microns with a magnification of 2.5. Photographs by Shannon Dugan Iverson and América Martínez Santitlán.

We may derive several important conclusions from the macrobotanical analysis so far conducted at the Franciscan sites in Tula. First, the overall makeup of the two collections did not change substantially; rather, the same plants were used at both sites with different distributions (with the sole exception of the garbanzo). Second, it is clear that native plants contributed substantially (nearly exclusively) to the colonial diet, in contrast to European animals, which were incorporated alongside native domesticates such as the domesticated turkey. Finally, the native plants utilized for food and medicine had clear religious meaning, in addition to their use as dietary staples, which did not simply disappear at the advent of institutional Spanish religion. I had expected that at least the Cathedral would show evidence of an increased dependence on European plants. Instead, 100% of the macrobotanical evidence is entirely within the Indigenous tradition, with the single exception of one garbanzo found at the Open Chapel. This shows that the friars in Tula adapted to local preferences by incorporating these foods and medicines into their communal practice.

7.7 CONCLUSIONS

In the preceding sections, I have used historical evidence and evidence from my excavations to demonstrate that everyday material culture formed an important part of everyday religious engagements with the sacred. The bodies of material evidence above (ceramics, faunal, and macrobotanical evidence) form just a part of the total material evidence from my project; we also collected stone, bone, and ceramic tools, and personal adornments made of shell and jade, all of which will be detailed in future publications. The evidence I have so far presented speaks to colonial changes that were gradual rather than immediate, and that appear to be driven by Indigenous preference rather than hegemonic control on the part of the friars.

Ceramic data demonstrate that coveted European imports (European majolica and porcelain) were not present at either Franciscan site in the early colonial period and that even in later eras these types were of Mexican manufacture and relatively rare, in contrast to findings from Structure K in Tula Grande. I have argued that this evidence points to Indigenous prerogatives at both religious sites in Tula. They also signify that friars were not able to maintain the ethnic and religious boundaries that they attempted to establish between their own Christian practice and Nahua Christian practice. As well, we found gradual transitions in ceramics in the purely colonial contexts. Red Ware increased at the Cathedral site, while proportions of Black-on-Orange ceramics decreased. We also some colonial-era changes in Black-on-Orange ceramics. Clearly, there was change and innovation in the new colonial context, yet these changes (even the use of lead glaze) were driven by Indigenous preferences.

The preliminary faunal and macrobotanical data also indicate a more complicated change in colonial uses of plants and animals. European imported animals were incorporated early in the colonial era, but coexisted with native domesticates, such as turkey. Both cultures considered these new animals (Durán 1971:147, Pohl 1981, Motolinía 1985:258) to be analogous to existing new world species, which probably eased their incorporation and changed the religious connotations of these animals in the colonial context. Both Indigenous peoples and Spanish peoples resignified the meanings of the novel foodstuffs that they encountered. In contrast, Indigenous plants make up nearly 100% of the plant food and medicine resources at both sites, with a single exception of the garbanzo at the Open Chapel. Importantly, staples such as corn and amaranth had religious significance in pre-Columbian Mesoamerica, and these connotations and medicinal uses are not likely to have disappeared immediately.

Diachronic analyses, though quite preliminary in the case of the faunal and macrobotanical collections, do not indicate the extreme changes that I had expected given the rather extreme changes in terms of landscape and architecture between the Open

Chapel and Cathedral occupations. Instead, the Open Chapel looks from a material perspective almost identical to a late-Aztec site, with a handful of glazed ceramics and some evidence of the use of imported animals. The early colonial contexts at the Cathedral are indicative of gradual change, despite an increased Spanish presence and several resident Franciscan friars.

Material change appears to have been driven by Indigenous input and active, creative engagement with early Christianity. These material contributions are not insignificant, because material culture had religious significance in both societies; Indigenous materialities shaped Christianity and made up part of processes whereby institutional Christian rites became multivalent. Institutional Spanish religion, from a large-scale perspective, certainly attempted to be a hegemonic set of practices that sought to fundamentally change Indigenous lives, behavior, landscapes, and worldviews. Yet the material culture at Tula shows that it was Indigenous priorities that shaped these practices. In combination with other evidence, such as book inventories that show the continued emphasis on friars' knowledge of Indigenous languages such as Nahua and Otomí, the record shows that the priorities of Indigenous peoples shaped the Church to an enormous degree, in a series of gradual changes whose impact is not popularly recognized. These are not "survivals," but rather creative innovations within a new social context, in which sacred meanings were completely reformed through active Indigenous engagement.

CHAPTER 8: CONCLUSIONS AND DIRECTIONS FOR FUTURE RESEARCH

8.1 RELIGIOUS CHANGE IN THE PRESENT

Religious change matters in the present. In spite of and because of the colonial religious conversion processes that I described in this dissertation, 83 percent of modern Mexican people self-identify as Roman Catholic. However, these numbers have decreased in recent years in part because of the activities of Evangelical Protestant groups in Mexico, particularly in the rural areas of Mexico's southernmost regions (US Department of State 2013). In those areas, some factions see evangelicals as "unwelcome outside influences and economic and political threats," while Protestants in the region also cited abuses, threats, and discrimination (US Department of State 2014). Meanwhile, the Catholic Church is reckoning with its own history: as I was completing this dissertation, Pope Francis apologized for the colonial Church's "grave sins" against the Indigenous peoples of the Americas (Yardley and Neuman 2015). Many see the current Pope's use of Liberation Theology (a Latin American theology that focuses on Jesus's call to aid the poor) as a radical shift that has revived the relevance of the Church in the modern world (Yardley and Romero 2015). These changes in the Roman Catholic Church are occurring in a global context of rampant religious violence, discrimination and abuse, and the most extreme displacement of religious communities in recent history (US Department of State 2013).

As these examples make clear, "spiritual war" is not and will never be over. These conflicts and changes pervade human life at global, national, regional, and individual scales. Archaeologists therefore cannot afford to ignore religion as a factor that informs and motivates social relations in societies of the present and past. These examples also clarify the idea that religion is implicated in power relations. Human relationships with the supernatural, and the histories associated with these relationships, inform policy, spur violence, and enable liberation from adverse circumstances. Finally, these examples also show that religious ideas impact and are impacted by economic and political institutions and practices.

In this dissertation I have examined one small part of those processes—religious change in colonial-era Tula—focusing in particular upon how Indigenous peoples adapted to and created religious change in circumstances of severe constraint. As I noted in Chapter 1, I understand power as something that circulates unevenly from the individual to the broadest levels of social interaction (i.e. institutions and discourses). To understand change, one may adopt an interpretive lens that sees the directionality of change as moving from the macrolevel (institutions and discourses) to the microlevel (individuals and local practices). So far, these kinds of top-down analyses have been the dominant explanation for religious change in archaeological studies of colonial Mexico (Córdova Tello 1992, Fournier García 1990). In my own study, I have adopted a Butlerian theoretical framework that reverses that directional lens by stressing the capability of the iterative process of resignification to enable structural change (see Butler 1990, Chapter 1). I have done this in order to address a gap in the archaeological literature of Central Mexico, since top-down processes alone cannot account for the various manifestations of Indigenous practices and understandings in modern Mexican Catholicism. But I also adopted this framework because (as I have noted throughout this dissertation) a top-down analysis did not account for the material changes and continuities that I observed in my data: I saw that change occurred very gradually and mostly within the realm of Indigenous-tradition objects (the gradual emphasis on Red Wares over Black-on-Orange ceramics, for example). In the next section, I summarize my observations by linking back to the broader Butlerian framework of power that I adopted in Chapter 1.

8.2 RESIGNIFICATION IN COLONIAL TULA

In Chapter 2, I explained religion in terms of a longue durée history of both Christianity and Aztec religion, and I explained some of the broad themes that emerged when those two religions came into contact in the early colonial era in central Mexico. I did so for two reasons. First, modern critiques (Asad 1993, Clendinnen 1990:110, Graham 2011:66-69, Tambiah 1990, Tavárez 2011:4) make clear that scholars of religious change must not take religion as a self-evident concept. Religion must be grounded in terms of particular histories, particular practices, and particular articulations with power. Second, I explained these histories in order to highlight some of the fissures that made institutional Christianity fundamentally unstable.

These included circumstantial and environmental factors: for example, the extremely low ratios of friars to Indigenous peoples made Spanish attempts at orthodoxy difficult, because individual friars had more influence (Graham 2011:286), and the Church was more susceptible to the preferences of Indigenous subjects. Linguistic and cultural translation was always dangerous, for by adopting Indigenous words and practices the friars thought that they were inviting idolatry (Ricard 1966:39-60). There were also epistemological factors: friars struggled to make concepts such as "sin" relevant to Indigenous peoples, and had little clue as to the meaning of practices such as sacrifice (Cervantes 1994, Gibson 1964). And, of course, the Church was vulnerable to the iterative process that resulted from active Indigenous engagement in that institution. In this dissertation, I have argued that whether it was intentional or not, active Indigenous participation in the Church changed that institution. I have also argued that the Church was less coherent and stable than is commonly believed. In making these arguments, I have tried to foreground some of the processes that allowed power to circulate.

In Chapter 3 (history of research) and Chapter 4 (preliminary research findings) I discussed the long-term history of Tula as viewed through material processes. This research demonstrates complex interrelationships between the Tula's three major occupational periods (Tollan-phase, Aztec-era, and colonial). In those chapters, I presented evidence to show that Tula should be reframed as an Aztec-era site, in addition to its status as an important early Postclassic polity. I also pointed out that the colonial-era materials and structures were placed in such a manner as to respond to those preexisting occupations, that is, colonial architecture was built directly on top of pre-existing Aztec- and Toltec-phase architecture. However, these findings do not conform to simplistic notions of "ideological warfare"—the church-on-temple model—that was a common pattern elsewhere[39]. It is possible that the Cathedral, built on top of a Toltec-era platform, originally supported a Toltec- or Aztec-era temple, but much more research would be needed to determine the structure's significance during those earlier eras. At this time, all that is certain is that the colonial occupation did not destroy the only locus of Aztec-era religious worship in Tula: the Tollan-phase ceremonial center at Tula Grande.

In Chapter 5, I used archaeological and historical evidence to reinterpret debates regarding historical practice in Tula. While previous historical and archaeological research has indicated that "Tollan" was a panregional phenomenon, I argued that it is also appropriate to frame Tula as a single Tollan—which, it seems, was what the Aztec empire attempted to do. I showed that the Aztecs had to first prove that Tollan was a single place, and then had to show that Tollan belonged to them alone (by re-installing the dynastic line in Tula, and by New Fire ceremonies, for example). I argued in Chapter 5 that early Aztec activities in Tula Grande, such as the beheadings of the chac-mools, may be evidence of a type of "termination ritual" that has been archaeologically recognized elsewhere in Mesoamerica (Stanton et. al. 2008). This timing is supported by carbon dates, Acosta's ceramic data, and Aztec accounts of their migration history, which places them in Tula circa 1163 A.D. When the Aztecs reinstalled the dynastic line in Tula itself after the formation of the Triple Alliance (Chipman 2005:82, Gillespie 1989:194), they appear to have performed a New Fire Ceremony. New Fire Ceremonies are known to have been associated with founding new polities (Boone 2000b, Fash and Fash 2009). Though similar historical manipulations also occurred at the earlier city of Teotihuacan (Fash and Fash 2009), it was

[39] Burkhart (1990:208) notes that these patterns were common.

Tula that conferred legitimacy on Tenochtitlan's dynastic line. However, evidence from other polities (see Umberger 1987) shows that Tenochtitlan's competitors contested Tenochtitlan's ownership of the past. It is important to remember that these processes were not only political, they were also religious, since as I explained in Chapters 2 and 5 the New Fire ceremony linked people from all walks of life to the calendar cycle and the gods. As well, I argued that Pyramid C shows evidence of having been used again as a temple in the Aztec era.

Parts of the Tula narrative were also contested in the colonial era: Indigenous leaders fought with the Moctezuma family in a series of cases to show that their reign was illegitimate (Chipman 2005). Ultimately, however, the Moctezumas prevailed: they kept their rights to labor tribute, gained Spanish titles, and even eventually lived as nobles in Spain (Chipman 2005). In sum, I have tried to show that historical practice in Tula was deeply intertwined with regional and factional claims to power. Historical claims were iterated over and over, using multiple tactics, as various groups attempted to claim, refashion, and contest the legacy of the Toltecs.

Based on the evidence of Aztec-era ritual practice that Acosta noted for Tula Grande (outlined in Chapters 3 and 5), and on my own excavations (Chapter 4), I emphasized in Chapter 6 that the Spanish Church in Tula failed to destroy what what was the most important focus of Aztec-era religious worship in Tula: that is, Tula Grande itself. This finding complicates notions of colonial-era "symbolic warfare," which previous research has also argued against (Low 1995). I explain that the Open Chapel and Cathedral had specific symbolic meaning to the friars in Tula, based on a text by the 13th century mendicant William Durandus (1907) that was found in the Cathedral's inventories. But I also present evidence that the form of this architecture had significance based on Indigenous ritual ontologies (see also, e.g. Edgerton 2001). Furthermore, my data show a much more intensive use of the Cathedral's atrium during the early colonial period, based on the foundations of a colonial structure that was later abandoned and was invisible in the atrium. Finally, I noted that Indigenous-tradition "ritual" objects are found in quantity in colonial contexts in Tula. I use these data to argue that in the earliest colonial years, Spanish friars had to adapt to particular Indigenous religious practices, such as the great importance that they placed on outdoor worship and public celebration. This was incorporated into the architecture and material at the Open Chapel. While I had originally expected that the Cathedral would show the elimination or reduction of these kinds of practices, it instead showed the opposite: these practices had already been incorporated into the fabric of Catholicism in Tula, and the data from the Cathedral show their continued importance. In Chapter 6, I interpreted these data using Catherine Bell's (1992) observation that ritual is an inadequate tool of social control. Instead, the material culture that I examined in Tula evidences processes that echo the Butlerian framework outlined in Chapter 1. That is, Indigenous ritual understandings came to exist within the Christian framework almost immediately in Tula, as shown by the architectural evidence at the Open Chapel. Through iterative processes, these particularly Indigenous contributions to Catholicism persisted and evolved, even as the Church became more stable and centralized.

Finally, in Chapter 7 I addressed the issue of "mundane" or "secular" (i.e., non-ritual) material culture. I used previous research (e.g. Brady and Peterson 2008) as part of my argument that ritual and mundane contexts overlap substantially. Further, in the historical period under study, both cultures imbued everyday objects with religious meaning. I argue that my sites constitute total religious contexts, particularly because the atria of these spaces were sites of communal festivals and religious celebrations. Based on those ideas, I examine three bodies of data: ceramics, macrobotanical specimens, and faunal data. Again, these show evidence of very gradual change. At the Open Chapel, the colonial-era ceramic assemblage looks almost identical to Aztec-era contexts. At the Cathedral, ceramic changes occur, but these are primarily within the Indigenous tradition, rather than the substantial increase in European-tradition imports that I had expected based on architectural patterns and on evidence from my previous research on ceramics from Structure K in Tula Grande (which contained a small but significant sample of European and Asian imports). In Chapter 7 I also discuss my project's macrobotanical data, which shows an almost total reliance on Indigenous-tradition plants. The faunal data, though preliminary, show more gradual change between the Open Chapel and Cathedral sites than I had expected. For the macrobotanical and faunal data, I also explain the specific religious connotations of various plants and animals. Once again, I argue that these data demonstrate the ways that meanings and practices from the Indigenous tradition came to be incorporated in the heart of Christianity in the early colonial era. Change is evident, but it is gradual and comes through repetition over decades of interactions.

8.3 DIRECTIONS FOR FUTURE RESEARCH

The research project that I undertook in 2013 has left me with a wealth of data, only a portion of which I was able to explore in this dissertation. I have yet to address the findings and implications of the detailed paleopathological study that Valerie Davis (Appendix B) completed for the project. These data provide a fascinating insight into colonial health, as well as gender and age dynamics (see also Mendoza 2010). Health patterns, especially if compared within Central Mexico and other regions, are also related to questions of power. For example, chronic stressors such as osteoarthritis, might indicate different work patterns by gender, or between different burial populations. I am also looking forward to exploring the stone tool analysis that Gustavo Nieto compiled for my project. Enrique Rodríguez Alegría (2008) showed that stone tool production at Xaltocan increased in the colonial era, as a result of a power vacuum created by a lack of imperial control over the obsidian sources. Were similar forces in play in Tula, which had a very different political configuration? There are also many data related to "small finds"—such as and Aztec and Toltec-tradition spindle whorls (see Suárez Cortés nd.). Since we know that cloth from Tula was associated with the Aztec emperors, comparing spindle whorls in pre-Columbian and colonial contexts would be significant. Finally, I left many stones unturned in my explorations of my project's ceramic data. For example, I did not address the many examples of utilitarian ceramic implements used in cooking and food preparation (e.g. *salineras* used for salt processing, large jars used for cooking, and *comales* or griddles). For example, salt was an especially important part of baptisms, which were in turn one of the most crucial elements of the Christian sacraments in the early colonial era (Pardo 2006). How might *salinera* proportions in the colonial era compare to pre-colonial contexts at either site?

An important lesson from this dissertation is that it is crucial to understand Tula as an Aztec-era site in order to understand its earlier Toltec occupation, as well as the later colonial-era occupation. Further research into Tula's later years may reveal important patterns that I was unable to explore here. For example, I was not able to explore potential rivalries or cooperation between the majority Otomí speakers and the minority of Aztecs who held power in Tula. Similarly, my rough interpretive divide between Indigenous and Spanish subjects largely left out ethnic and racial divides that are known to have existed in the early colonial period: Tula was home to Afro-descendent peoples, Spanish laypersons, *Castas* (or mix-raced peoples), along with various groups that I have classed collectively as "Indigenous." Further research, I hope, will refine and explore those divisions. Finally, I am aware of the irony of failing to include gender in a study that adopts a Butlerian theoretical framework to explain colonial change. I hope to ameliorate my inattention to that subject in my future research.

This project has contributed data and a theoretical framework that would be well served by comparison at other colonial religious sites in Mexico. The old narratives that posited colonial religious change as immediate and all-encompassing (e.g. Ricard 1966) are swiftly being replaced with more complicated understandings based on new readings of the documents (Restall 2003a). This study presents a material line of evidence to complement that literature. It is my hunch that future research will clarify what I have tried to show here: that Spanish colonial institutions were deeply dependent on preexisting

Indigenous structures, and deeply indebted to the active contributions of Indigenous agents.

APPENDIX A: CERAMIC TYPOLOGY

BY SHANNON DUGAN IVERSON AND MARIA ELENA SUÁREZ CORTÉS
(Portions of this report were commissioned by Shannon Dugan Iverson as part of her 2013 excavations. Shannon Dugan Iverson translated those portions from Spanish to English.)

During my 2013 excavations, we recovered ceramics that we assigned to several broad families, organized chronologically. These included:

- **Formative**
- **Chingú phase (Teotihuacano)**
- **Prado**
- **Corral**
- **Tollan**
- **Aztec (corresponding to Fuego, Palacio, and Tesoro phases)**
- **Colonial (Corresponds to Tesoro phase, includes 1521-1810) and Historic (Post- 1810 ceramics)**

In the Tollan ceramic complex (900-1150 A.D.) and for earlier periods, ceramics are distinguished by type and further by variety. "Variety" in this typology is chiefly a matter of difference in form (see Cobean 1990). In contrast, in the Aztec ceramic typology ceramics are divided by wares (such as Orange Ware and Red Ware), then by type and finally by decorative motifs, loosely following Jeffrey Parson's dissertation (1966) and Enrique Rodríguez-Alegría's dissertation (2002).

In the ceramic analysis phase I worked closely with Maria Elena Suárez Cortés, who compiled type descriptions and photographs for the Toltec family based on the sample available from my 2013 excavations. The Formative, Chingú, Prado, Corral, and Tollan family descriptions are entirely her work, which I have loosely translated here. I have elaborated the Aztec, Colonial, and Historic type descriptions based on Parsons (1966), Deagan (1987), Florida Museum of Natural History Type Collection (FMNH 2015), Lister and Lister (1983), Rodríguez Alegría (2002), and Seifer (1977), among others.

FORMATIVE FAMILY:

TYPE: **Negro Pulido Esgrafiado** (Black burnished-incised)

VARIETY: Not specified

PASTE: Exhibits a compact, medium-textured pasted, which contains sand. The paste also exhibits transparent white and black inclusions. The paste is reddish brown (2.5YR 6/4) and oxidized.

FINISH: Both surfaces (interior and exterior) are black in color (5Y 2.5/1) and burnished.

FORM: In the type collection we could distinguish the following forms:

-Compound silhouette forms with direct rims that could be beveled, rounded, or flat. Rims were some times everted with a width between 5mm and 8 mm; while the width of the vessel walls varied between 4 mm and 9 mm; vessel diameter varied between 15 cm and 25 cm.

-Dishes with straight wall that exhibit direct rims that are beveled, flat, or round and are between 5 mm and 7 mm wide. Vessel diameter varied between 20 cm and 25 cm.
-Simple *Tecomates* (earthenware pots with a restricted rim) whose rim is direct and rounded with a width that varies between 4mm and 6 mm; the width of its walls varies between 4 mm and 7 mm; its diameter is between 15 cm and 20 cm.

-Tecomates with "collars" that present a direct rounded rim with a width of 2 mm, wall widths of approximately 5 mm; and vessel diameters of approximately 10 cm.

-Short-necked *Ollas* with a slightly everted rim. Wall width was approximately 8 mm and vessel diameter of about 10 cm.

-Short-necked Ollas with a slightly everted rim, with wall widths of approximately 8 mm and a diameter of approximately 20 cm.

DECORATION: Decoration consists of engraved designs: in compound-silhouette dishes the designs appear on the interior and exterior of the vessels, and designs primarily consists of parallel horizontal lines. Dishes with straight walls only present decoration on vessel exteriors, with simple designs of curved and horizontal lines. Tecomates have motifs on vessel exteriors, with a common motif of curved and horizontal lines. Finally, the rims of ollas have an undulating, "pinched" (*pellizcado*) decoration.

FUNCTION: Unknown.

TEMPORALITY: Middle Formative (700-400 B.C.)

DISTRIBUTION: We found at least 30 sherds in Operation 6 at the Cathedral of San José.

REFERENCES: This ceramic type is identified by Alba Guadalupe Mastache Flores and Ana María Crespo Oviedo in Tula as part of the Middle Formative ceramic complex, in which they identified only one sherd of a Black Burnished Incised Basin (1982:13, 16). In the Temamatla region in Mexico State, during the Zacatenco phase there is a similar ceramic type that is known as Anáhuac Pulido (Ramírez et. al. 2000:75-79).

a

b

Figure A1: Exterior (a) and interior (b) of a compound silhouette Black Burnished-Incised dish

c d

Figure A.2: Exterior (c) and interior (d) of a compound-silhuette Black Burnished-incised dish

Figure A.3: Fragments of the exteriors of straight-walled dishes, Black Burnished-Incised

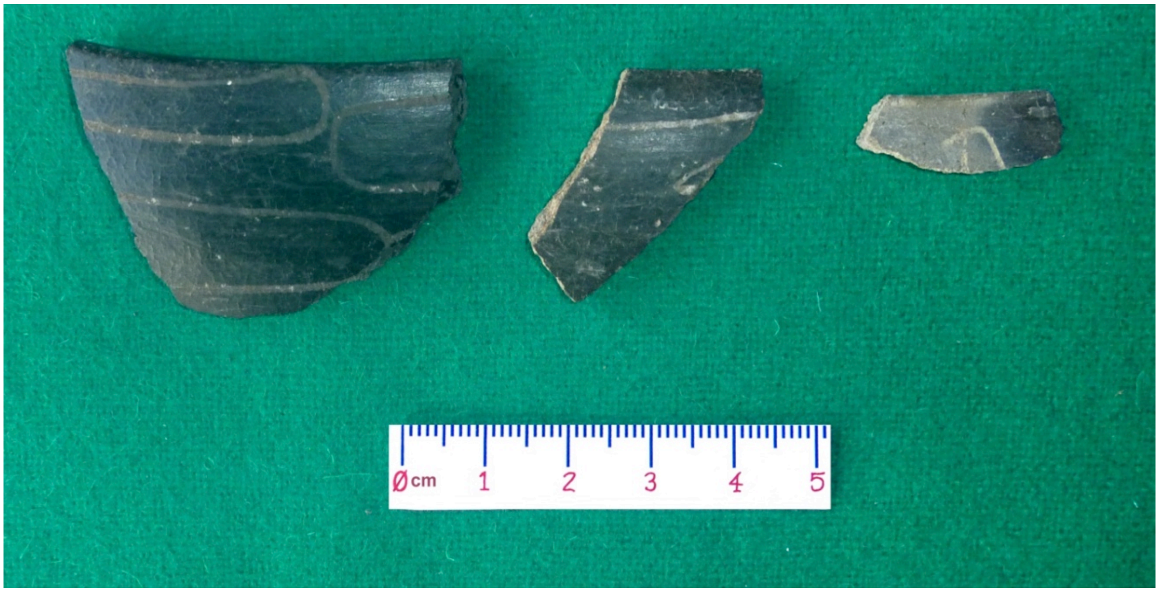


Figure A.4: Fragments of the exterior portion of simple *Tecomates*, Black Burnished-Incised

Figure A.5: Fragment of exterior portion of a collared *Tecomate*, Black Burnished-Incised

TYPE: **Borde Inciso Pintado Con Rojo y Blanco** (Incised Rim Painted in Red and White)

PASTE: Medium-textured compact paste, which contains sand and dispersed white particles and metallic inclusions. The color of the paste is medium brown (5YR 6/4), frequently with a blackened interior portion.

FINISH: Both interior and exterior surfaces exhibit burnishing. Surfaces are covered with a medium-brown slip (5YR 6/4) painted with red (10R 4/8) slip and white (10R 8/1) slip.

FORM: In the sample the most common form is a compound silhouette dish with spherical tripod supports, with walls that are generally everted. The width of the walls varies between 5 mm and 1.04 cm, while vessel diameter varies between 25 and 40 cm.

DECORATION: Decorative techniques in this type are: incised grooves on the vessel exterior that are horizontally delimited by small incisions that are located at the vessel rim. The brown, white, and red slips are also part of the decoration, and are present on vessel interiors and exteriors.

FUNCTION: Unknown.

TEMPORALITY: Upper Formative (400-200 B.C.)

DISTRIBUTION: At least 17 examples; 14 from Operation 6 and 3 from Operation 7 in the Cathedral of San José.

REFERENCES: Alba Guadalupe Mastache Flores and Ana María Crespo Oviedo found this ceramic type in the Cathedral of San José in Tula, Hidalgo; which they consider diagnostic of the Upper Formative period (1982:13 and 15). In the Temamatla region in Mexico State there is a similar ceramic type known as “Ticomán Pulido” that forms part of the Ticomán phase (Ramírez et. al. 2000:103-106).

Figure A.6: Image showing vessel exteriors of compound silhouette dish fragments of Incised-Rim Painted in Red and White

Figure A.7: Image showing vessel interiors of compound silhouette dish fragments of Incised-Rim Painted in Red and White

Figure A.8: Image showing exterior fragments of compound silhouette dish fragments of Incised-Rim Painted in Red and White

Figure A.9: Image showing vessel interiors of compound silhouette dish fragments of Incised-Rim Painted in Red and White

e

f

Figure A.10: Exterior (e) and interior (f) of compound silhouette dish fragments of Incised-Rim Painted in Red and White

g

h

Figure A.11: Exterior (g) and interior (h) of compound silhouette dish fragments of Incised-Rim Painted in Red and White

Figure A.12: Spherical support of Incised-Rim Painted in Red and White

CHINGÚ/TEOTIHUACANO FAMILY

TYPE: **Cajete Acanalado Negro Pulido** (Grooved Black-Incised Dish)

VARIETY: Not specified.

PASTE: Compact coarse-textured paste with frequent red, white, and metallic inclusions. The paste color is brown (7.5YR 5/2) with reduced firing in which a blackened nucleus (core) is visible.

FINISH: The two surfaces (interior and exterior) are dark brown (7.5Y 3/3) and burnished.

FORM: The collection includes a single example of a body sherd of a dish with straight-divergent walls that are 6 mm thick.

DECORATION: The body sherd exterior has shallow grooves about 2 mm wide.

FUNCTION: Unknown.

TEMPORALITY: Chingú phase (150-650 A.D.)

DISTRIBUTION: We encountered 1 sherd in Operation 6 in the Cathedral of San José.

REFERENCES: In the Tula area María Elena Suárez Cortés identifies this ceramic as Teotitihuacán style (Suárez Cortés personal communication, 2013).

Figure A.13: Image showing an exterior vessel fragment of a Grooved Black-Incised Dish

PRADO FAMILY

TYPE: **Ana María Rojo Sobre Café** (Ana Maria Red-on-Brown)

VARIETY: Not specified.

PASTE: The paste is composed of fine sand and mica particles, as well as black crystal particles. The color of the paste is brown (7.5YR 6/3). Vessels are oxidized and well-fired.

FINISH: In both surfaces (exterior and interior) the color is medium brown (5YR 6/4) with portions painted in red (10R 4/8) and a burnished finish.

FORM: Two body sherds correspond to the form identified for this ceramic type: a tripod dish with an everted rim, frequently with conical or elongated cylindrical supports.

DECORATION: This ceramic type exhibits motifs painted in red (10R 4/8) that are similar to Coyotlatlelco Red-on-Brown motifs. These are usually found on vessel interiors. Common motifs include lines and wide bands. On the exterior surface vessels always have a wide band of red on the lower portion of the vessel body.

FUNCTION: Possibly served for food preparation and food serving.

TEMPORALITY: Prado phase (650-750 A.D.)

DISTRIBUTION: 2 sherds were found in Operation 6 in the Cathedral of San José.

REFERENCES: In the Tula area this ceramic type is reported by Robert H. Cobean (1990:92-104)

Figure A.14: Above, see the red line that is located on the exterior portion of the Ana Maria Red-on-Brown tripod dish. Below, see the characteristic interior decoration of the Ana Maria Red-on-Brown tripod dish

CORRAL FAMILY

TYPE: **Cañones Rojo Sobre Café** (Cañones Red-on-Brown)

VARIETY: Not specified

PASTE: Past is semi-compact with a rough texture, with a sand temper and small black and transparent inclusions. The color of the paste is light brown (7.5YR 7/3) and oxidized firing.

FINISH: The exterior surface and interior of the rim has a fine, brown-colored clay slip that is very smoothed and the interior of the vessel exhibits the natural color of the clay (7.5YR 7/3) and is roughly finsished.

FORM: Tall-necked olla with slightly everted rims, with a body that is almost spherical. The vessel walls vary in width, between 7 mm and 1.03 cm.

DECORATION: It is probable that these vessels were used to store foodstuffs and liquids.

TEMPORALITY: Corral phase (750-850 A.D.)

REFERENCES: In the Tula area this ceramic type is reported by Robert H. Cobean (1990:238-244).

Figure A.15: Various tall-necked, everted-rim Ollas that correspond to the Cañones Red-on-Brown type. Photographs are of the exterior portion of the vessels, which have thin vertical bands of dark red paint.

Figure A.16: Image showing a fragment of a Cañones Red-on-Brown sherd. This sherd is from the portion of the vessel where a handle would be attached.

TYPE: **Coyotlatelco Rojo Sobre Café** (Coyotlatelco Red-on-Brown)

VARIETY: Hemispherical dish

PASTE: Paste is semi-compact and has a medium texture. Temper is a fine sand with small white, transparent, and metallic particles. The color of the paste is medium-brown (5YR 5/3). Well-fired in an oxidized firing environment.

FINISH: The interior and exterior surfaces have a fine clay slip that is brown (5YR 6/4) with a burnished finish.

FORM: Hemispherical dish without supports. Based on our sample, the walls are direct with rounded and flat rims that are around 3 mm thick. Vessel walls vary between 6 mm and 9 mm in thickness, and vessel diameter is around 20 cm.

DECORATION: Designs on the vessel exterior are painted in red (10R 4/6), which consist of straight lines, broken lines, and spirals. Vessel rims are also decorated with a red band.

FUNCTION: Probably used for food preparation and food serving.

TEMPORALITY: Corral phase (750-850 A.D.)

DISTRIBUTION: At least 3 sherds were found in Operation 6 in the Cathedral of San José.

REFERENCES: Robert H. Cobean reports this ceramic type in the Tula area (1990:130-145)

Figure A.17: Detail showing exterior decoration on Coyotlatelco Red-on-Brown, Hemispherical variety.

TYPE: **Coyotlatelco Rojo Sobre Café** (Coyotlatelco Red-on-Brown)

VARIETY: Dish with curving-convergent walls

PASTE: The paste is semi-compact with a medium texture. Temper is fine sand with small black, transparent, and metallic particles. The color of the paste is medium brown (5YR 5/3). Vessels are well-fired in an oxidized environment.

FINISH: Interior and exterior surfaces have a fine layer of clay slip that is brown in color (5YR 6/4) and well-burnished.

FORM: Dish with curving convergent walls without supports. In our sample, the rims are direct and rounded and about 3 mm thick, while vessel walls are between 6 mm and 8 mm thick. Vessel diameter is around 20 cm.

DECORATION: Red (10R 4/6) motifs are painted on the exterior walls of the vessels. The designs include sections of curving lines, a wide band, and a wide band around the interior rim which extends slightly to the vessel exterior.

FUNCTION: Possibly used for food preparation and food serving.

TEMPORALITY: Corral Phase (750-850 A.D.)

DISTRIBUTION: Found in Operation 6 in the Cathedral of San José.

REFERENCES: Robert Cobean reports the ceramic in the Tula area (1990)

See also Suárez Cortés and Nieto Ugalde 2013.

Figure A.18: Detail showing ceramic decoration on Coyotlatelco Red-on-Brown, curving-convergent wall variety.

TYPE: **Coyotlatelco Rojo Sobre Café** (Coyotlatelco Red-on-Brown)

VARIETY: Hemispherical tripod dish

PASTE: Semi-compact, medium textured paste with fine sand temper. The paste has white, black, red, and metallic inclusions. The paste color is light brown (10YR 7/4). Well-fired in an oxidizing environment.

FINISH: Interior and exterior surfaces are covered in a thin layer of light brown clay slip (10YR 6/3) with a burnished finish.

FORM: Hemispherical tripod dish with solid conical supports. Average vessel wall thickness is around 5 mm.

DECORATION: Decoration is painted in red stripes (10R 4/6) around the base of the vessel.

FUNCTION: Probably used for food preparation and serving.

TEMPORALITY: Corral phase (750-850 A.D.)

DISTRIBUTION: Operation 6 in the Cathedral of San José

REFERENCES: Robert Cobean (1990), See also Suárez Cortés and Nieto Ugalde 2013.

Figure A.19: Image showing a Coyotlatelco Red-on-Brown hemispherical tripod dish variety support.

TYPE: **Coyotlatelco Rojo Sobre Café** (Coyotlatelco Red-on-Brown)

VARIETY: Miscellaneous fragments

PASTE: Semi-compact, medium textured paste with fine sand temper. The paste has white, black, red, and metallic inclusions. The paste color is light brown (10YR 7/4) to medium brown (5YR 5/3). Well-fired in an oxidizing environment

FINISH: Interior and exterior surfaces vary in color from light brown (10YR 6/3) to brown (5YR 6/4) which have a burnished finish.

DECORATION: Designed painted in red (10R 4/6) that can be present on vessel interiors or exteriors, which consist of vertical stripes, straight lines, curved lines, and undulating lines.

FUNCTION: Possibly used for food preparation and food serving.

TEMPORALITY: Corral phase (750-850 A.D.)

DISTRIBUTION: We found at least 12 sherds in Operation 6 in the Cathedral of San José.

REFERENCES: Robert Cobean (1990), See also Suárez Cortés and Nieto Ugalde 2013.

Figure A.20: Image showing exterior side of Coyotlatelco Red-on-Brown miscellaneous vessels.

Figure A.21: Image showing interior side of Coyotlatelco Red-on-Brown miscellaneous vessels.

TYPE: **Gustavo Rojo Sobre Café Burdo (Incensario de Sartén).** Gustavo Red-on-Rough Brown (Frying-pan style incense burner)

VARIETY: Incense burner (*sahumador*)

PASTE: The paste is compact and has a fine texture, with dispersed white, transparent, and metallic inclusions. The color of the paste is light brown (7.5YR 6/4) and exhibits a reduced firing environment with a blackened core.

FORM: Incense burner with a long, hollow tubular handle. The "pan" portion of the vessel has walls that are slightly everted. The vessel walls varied between 4 mm and 6 mm thick, with a direct rounded rim that is about 3 mm to 5 mm thick. Vessel diameter is around 20 cm.

DECORATION: The vessel has a wide band of red paint around the interior rim.

FUNCTION: Probably used to burn incense during religious rituals.

TEMPORALITY: Corral phase (750-850 A.D.)

DISTRIBUTION: Operation 6 in the Cathedral of San José.

REFERENCES: Robert Cobean (1990), See also Suárez Cortés and Nieto Ugalde (2013).

Figure A.22: Image showing the exterior side of fragments of the "pan" portion of the Gustavo Red-on-Rough-Brown Frying-Pan Style Incense Burner.

Figure A.23: Image showing the interior side of fragments of the "pan" portion of the Gustavo Red-on-Rough-Brown Frying-Pan Style Incense Burner.

TYPE: **Jiménez Café Sellado** (Jiménez Stamped Brown)

VARIETY: Not specified

PASTE: Paste is semi-compact with a medium texture, with a fine sand temper and black, red, and metallic inclusions. The color of the paste is light brown (10YR 6/3) which shows an oxidized firing environment.

FINISH: The interior and exterior surfaces are burnished. Surface color ranges between light brown (10YR 6/3) and light reddish brown (2.5YR 7/4)

FORM: The sample included fragments of cups with straight walls that are between 5 mm and 7 mm thick.

DECORATION: On vessel exteriors there are stamped designs that consist of vertical, undulating, and horizontal lines. These form motifs that cannot be well-defined based on the available sample.

FUNCTION: Probably associated with elite activities.

TEMPORALITY: Corral phase (750-850 A.D.)

DISTRIBUTION: Found in Operation 6 in the Cathedral of San José.

REFERENCES: Robert Cobean (1990), See also Suárez Cortés and Nieto Ugalde (2013).

Figure A.24: Image showing a fragment of Jiménez Brown Stamped.

Figure A.25: Image showing a fragment of Jiménez Brown Stamped.

TYPE: Mazapa Rojo Sobre Café (Mazapa Red-on-Brown)

PASTE: Semi-compact, medium-textured paste with a sand temper and white and metallic inclusions. The paste color is light brown (7.5YR 6/4). Reducing firing environment with a thin blackened core.

FINISHING: Exterior and interior surfaces are light brown (7.5YR 6/4) with a burnished finish. Sometimes both surfaces show dark patches due to imperfections in the firing process.

FORM: Dish with hemispherical walls and a flat base, which have a thickness between 5 mm and 8 mm. Rims are direct and rounded or oval with an average thickness of 4 mm. Vessel diameters are between 20 cm and 25 cm.

DECORATION: Designs are undulating lines on the interior surface painted in red (10YR 5/5). There is also a red band around the vessel lip.

FUNCTION: Possibly used to prepare and serve foods.

TEMPORALITY: Terminal Corral Phase (850-900 A.D.)

DISTRIBUTION: Found in Operation 6 in the Cathedral of San José.

REFERENCES: Robert Cobean (1990), Suárez Cortés and Nieto Ugalde (2013).

Figure A.26: Image showing the interior decoration of Mazapa Red-on-Brown

TYPE: **Joroba Anaranjado Sobre Crema** (Joroba Orange-on-Cream)

VARIETY: Miniature

PASTE: Paste is semi-compact with a medium texture, sand temper, and some dispersed white inclusions. The paste color is medium brown (5YR 6/4) with oxidized firing.

FINISH: Both exterior and interior surfaces have a cream-colored slip (10YR 8/2) which have varying burnishing.

FORM: Miniature vessels that may be small plates or small compound-silhuette dishes. Vessel thickness is between 4 mm and 6 mm, with direct rounded or oval rims that are around 2 mm to 3 mm thick. Vessel diameter is around 10 cm.

DECORATION: Decoration may be present on vessel interiors or exteriors. Decoration consists of painted motifs with a color that varies between light orange (5YR 7/6) and dark orange (2.5YR 5/8). Designs are “S” shaped or irregular curves. The vessel border also has a band of orange paint.

FUNCTION: Unknown.

TEMPORALITY: Terminal Corral (850-900 A.D.)

REFERENCES: Robert Cobean (1990), Suárez Cortés and Nieto Ugalde (2013).

Figure A.27: Fragments of Joroba Orange-on-Cream, showing interior decoration.

Figure A.28: Image showing a fragment of Joroba Orange-on-Cream with exterior decoration.

TOLLAN FAMILY

TYPE: **Abra Café Burdo** (Abra Rough Brown)

VARIETY: Abra

PASTE: Rough-textured, medium-compacted paste with large sand and pebble temper, with some white and metallic inclusions. The color of the paste is between light brown (7.5YR 7/3) to dark brown (5YR 6/3). Reducing firing atmosphere with a thick black core.

FINISH: The exterior surface is rough and slightly smoothed, in contrast to the interior surface, which is rough but also has rough horizontal marks. The color of both surfaces varies between light brown (7.5R 7/3) and dark brown (5Y 6/3). Surfaces have dark splotches from the firing process.

FORM: Brazier with straight-divergent walls that have a thickness that varies between 1.02 and 1.04 cm, with a flat rim and a thickness between 1.01 cm and a diameter of approximately 60 cm.

DECORATION: The decoration is in designs with small nubbins or spikes of clay on the vessel body, while the vessel rim is encircled with a rim of clay in relief.

FUNCTION: Used to burn wood to heat homes, to provide fire for cooking, and for burning incense during religious ceremonies.

CHRONOLOGY: Tollan phase (900-1150 A.D.)

REFERENCES: Robert Cobean (1990), Suárez Cortés and Nieto Ugalde (2013).

Figure A.29: Image showing the exterior portion of a fragment of a Café Burdo, Abra Variety brazier

Figure A.30: Image showing exterior side of a fragment of a Café Burdo, Abra variety vessel showing relief decoration on vessel body.

Figure A.31: Image showing exterior side of two fragments of Café Burdo, Abra variety vessels showing relief decoration on vessel bodies.

TYPE: **Abra Café Burdo** (Abra Rough Brown)

VARIETY: Con Soportes (With Supports)

PASTE: Rough-textured, medium-compacted paste with large sand and pebble temper, with some white and metallic inclusions. The color of the paste is between light brown (7.5YR 7/3) to dark brown (5YR 6/3). Reducing firing atmosphere with a thick black core in the majority of the wall cut.

FINISH: The exterior surface is rough and slightly smoothed, in contrast to the interior surface, which is rough but also has rough horizontal marks. The color of both surfaces varies between light brown (7.5R 7/3) and dark brown (5Y 6/3). Surfaces have dark splotches from the firing process.

FORM: A brazier with the shape of a truncated conical tripod vessel with a flat base and hollow cylindrical supports. The thickness of the straight-divergent vessel walls is between 7 mm and 1.05 cm, while its flat rims vary between 6 mm and 1.08 cm, and the vessel diameter varies between 30 cm and 40 cm.

DECORATION: Found on the exterior surface, on which the only decoration is a clay relief decoration that encircles the rim (this is between 1.03 and 2 cm wide).

FUNCTION: Used to burn wood to heat homes, to provide fire for cooking, and for burning incense during religious ceremonies.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Robert Cobean (1990), Suárez Cortés and Nieto Ugalde (2013).

Figure A.32: Image showing rims of the Abra Café Burdo, With Supports variety (vessel exterior)

TYPE: **Abra Café Burdo** (Abra Rough Brown)

VARIETY: Reloj de Arena Simple (Simple Hourglass)

PASTE: Rough-textured, medium-compacted paste with large sand and pebble temper, with some white and metallic inclusions. The color of the paste is between light brown (7.5YR 7/3) to dark brown (5YR 6/3). Reducing firing atmosphere with a thick black core in the majority of the wall cut.

FINISH: The exterior and interior surfaces are rough and slightly smoothed. The color of both surfaces varies between light brown (7.5R 7/3) and dark brown (5Y 6/3). Surfaces have dark splotches from the firing process.

FORM: Brazier in a tall, thin hourglass form. Vessel walls are between 8 mm and 1.05 cm thick, while its rims are flat and between 8 mm and 9 mm thick. The vessel diameter is between 40 and 60 cm.

DECORATION: Decoration is present on the exterior surface, on which the decoration is a clay relief decoration that encircles the rim.

FUNCTION: Used to burn wood to heat homes, to provide fire for cooking, and for burning incense during religious ceremonies.

REFERENCES: Robert Cobean (1990), Suárez Cortés and Nieto Ugalde (2013).

Figure A.33: Image showing rims of Abra Café Burdo, Simple Hourglass variety vessels (vessel exteriors)

TYPE: **Abra Café Burdo** (Abra Rough Brown)

VARIETY: Calado (Perforated)

PASTE: PASTE: Rough-textured, medium-compacted paste with large sand and pebble temper, with some white and metallic inclusions. The color of the paste is between light brown (7.5YR 7/3) to dark brown (5YR 6/3). Reducing firing atmosphere with a thick black core.

FINISH: The interior and exterior surfaces are rough and slightly smoothed, with rough horizontal marks. The color of both surfaces is dark brown (5YR 6/3).

FORM: Brazier, which according to the sample in the sample from our excavations has straight-divergent walls with a thickness ranging between 8 mm and 1.03 cm, with a flat rim around 8 mm wide. Vessel diameter is around 50 cm.

DECORATION: Decorative motifs are created using perforations in the vessel body.

FUNCTION: Used to burn wood to heat homes, to provide fire for cooking, and for burning incense during religious ceremonies.

TEMPORALITY: Tollan phase (900-1150 A.D.)

DISTRIBUTION: Operations 6 (Contexts 2, 49, and 55) and 7 (Contexts 19 and 22) at the Cathedral of San José.

REFERENCES: Robert Cobean (1990), Suárez Cortés and Nieto Ugalde (2013).

Figure A.34: Image showing a fragment of Café Burdo, perforated variety.

Figure A.35: Image showing two fragments of Café Burdo, perforated variety.

TYPE: **Acta Rojo Pulido** (Acta Burnished Red)

VARIETY: Acta

PASTE: The paste is compact and medium-textured, with a large proportion of sand and a moderate amount of black, white, and metallic inclusions. The color of the paste is light brown (7.5YR 6/4) and the firing environment is reducing; vessels have a blackened core.

FINISH: The exterior surface has a fine, thin clay red slip (10R 5/8) which is sometimes burnished. The interior is not slipped—its finish is rough and preserves the natural light brown color of the clay (7.5YR 6/4).

FORM: *Tecomates* (earthenware pots with restricted rims). Wall thickness varies between 8 mm and 1.01 cm, with an approximate vessel diameter of 25 cm. Acta Burnished Red probably also has a miniature tecomate form.

DECORATION: None

FUNCTION: It is probable that these tecomates were used for food storage—possibly grains or other foodstuffs.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.36: Exterior portion of Acta Burnished Red, Acta variety vessel fragments.

TYPE: **Acta Rojo Pulido** (Acta Burnished Red)

VARIETY: Cajete (dish)

PASTE: The paste is compact and medium-textured, with a large proportion of sand and a moderate amount of black, white, and metallic inclusions. The color of the paste is light brown (7.5YR 6/4) and firing is in a reducing environment.

FINISH: Exterior and interior surfaces have a red slip that varies in color between light red (10R 5/6) and medium red (10R 5/8) with burnished portions, on both surfaces this gives the appearance of an "*a brochazos*" (brushed) finishing technique.

FORM: Dish with curvng-convergent walls that are between 8 mm and 1.01 cm thick. Rims are direct and rounded or flat with a width between 6 mm and 1.00 cm and diameters between 30 cm and 40 cm.

DECORATION: None

FUNCTION: Possibly used to store or serve foods.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

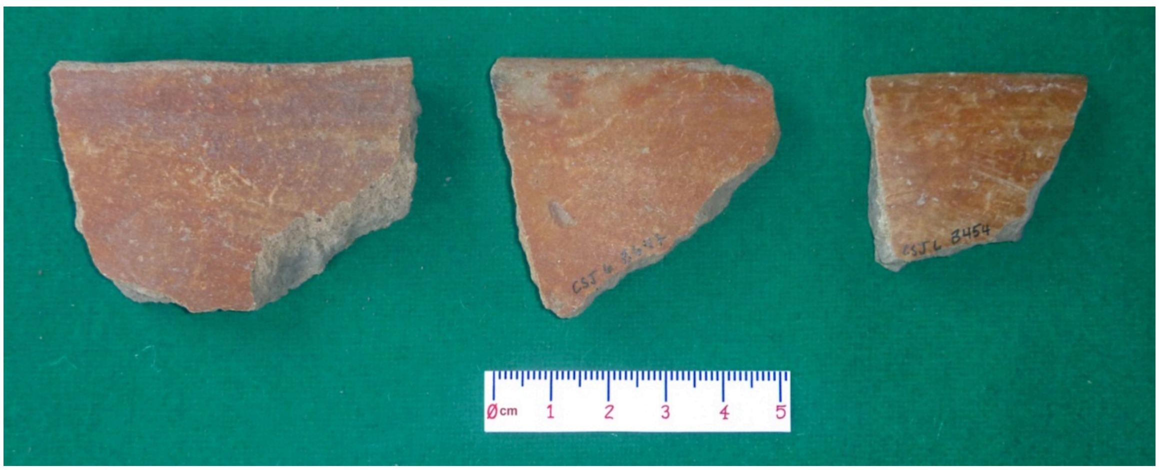


Figure A.37: Exterior portion of fragments of Acta Burnished Red, dish variety.

Figure A.38: Interior portion of fragments of Acta Burnished Red, dish variety.

TYPE: **Alicia Calado** (Alicia Perforated)

VARIETY: Not specified

PASTE: Compact, medium-textured paste with a fine sand temper that has occasional metallic particles. The paste color varies between light brown (7.5YR 6/3) and medium brown (5YR 6/3) the majority of the sherds are well-fired in an oxidized environment.

FINISH: Exterior surfaces are generally rough and unslipped, and are light brown in color (7.5YR 6/4). The interior rim is painted with a clay slip with dark red pigment (10R 4/6); this portion is highly burnished.

FORM: Globular *incensario* (censer) with a cylindrical collar and an everted rim. Vessels have tripod supports; two of which are hollow spherical supports and the other can be an elongated cylinder, similar to a vessel handle. There are a number of rectangular, circular, and triangular perforations cut into the vessel's body.

DECORATION: The most notable decoration of this type are the perforations, which are chiefly concentrated at the top half of the globular body of the vessel. The vessel is also painted in a dark red and marked with shallow engravings that can be in vertical, horizontal, and circular, and diagonal lines.

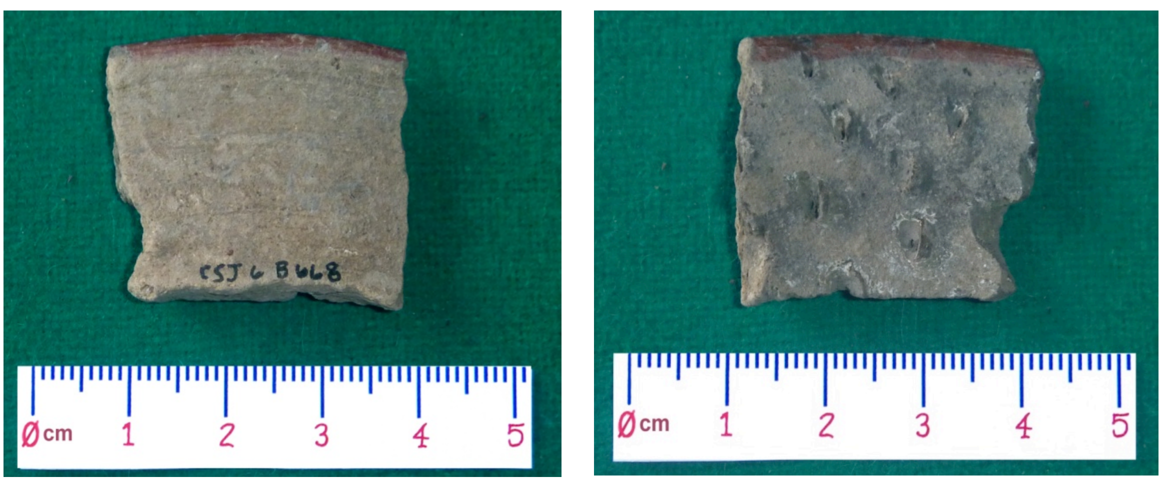
FUNCTION: Used as a censer to burn incense and other ritual substances. The interior surfaces often have a layer of burned residue.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.39: Image showing fragments with typical decorative motifs that are present on the exterior portion of Alicia Calado censers.

Figure A.40: Image showing Alicia Calado rims.



i j

Figure A.41: Exterior portion (i) and interior portion (j) of an Alicia Calado rim, in which the reader may note the incised decoration on the interior of the vessel.

TYPE: **Blanco Levantado** (Raised White)

VARIETY: Not specified

PASTE: Compact medium-textured paste, which has dispersed inclusions of white, black, and metallic particles. Paste color may be medium brown (5YR 6/4), dark brown (5YR 5/3) or reddish yellow (7.5YR 8/6) with an oxidized firing environment.

FINISH: The exterior surface is smoothed, and dark brown (5YR 5/3), grey (10YR 6/1) and reddish yellow (7.5 YR 8/6). The interior surface is rough textured, and its color varies between light brown (7.5YR 6/4) brownish grey (10YR 5/2), and reddish yellow (7.5YR 8/6).

FORM: *Olla* (large pot) with an everted rim, a cylindrical neck and a strip of raised clay decoration that is in turn marked with incisions and bumps. The body of the olla has a characteristic decoration painted in cream or off-white with a transparent appearance with a cross-cutting linear pattern, similar to a basket weave.

FUNCTION: Probably used for storage.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.42: Image showing the exterior portion of Blanco Levantado vessels. Readers may note the textile-like decorative motifs of these sherds.

TYPE: **Bordo Rojo Sobre Café** (Bordo Red-on-Brown)

VARIETY: Not specified

PASTE: Compact, fine-textured paste with a sand temper in which one may observe dispersed black, white, and metallic inclusions. The color of the paste varied between light brown (7.5YR 6/4) and medium brown (5YR 6/4), fired in a reduced environment that produced a blackened core in the vessel wall profile.

FINISH: The exterior and upper interior surfaces have a thin layer of fine clay slip with a burnished finish. The interior of the body below the slip has a rough finish. The color of both surfaces varied between light brown (7.5YR 6/4) and brown (7.5YR 5/4).

FORM: Globular *olla* with a cylindrical neck and a slightly everted rim. The wall thickness ranged between 4 mm and 8 mm. Rims were rounded or flat with a thickness between 4 mm and 5 mm. Diameter of the vessel mouth varied between 10 and 20 cm.

DECORATION: Decoration is found on the exterior of the body of the vessel and consists principally of wide horizontal bands of dark red paint (10R 4/6) and red bands that may also have designs painted in the negative.

FUNCTION: Possibly used to store foodstuffs and liquids.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

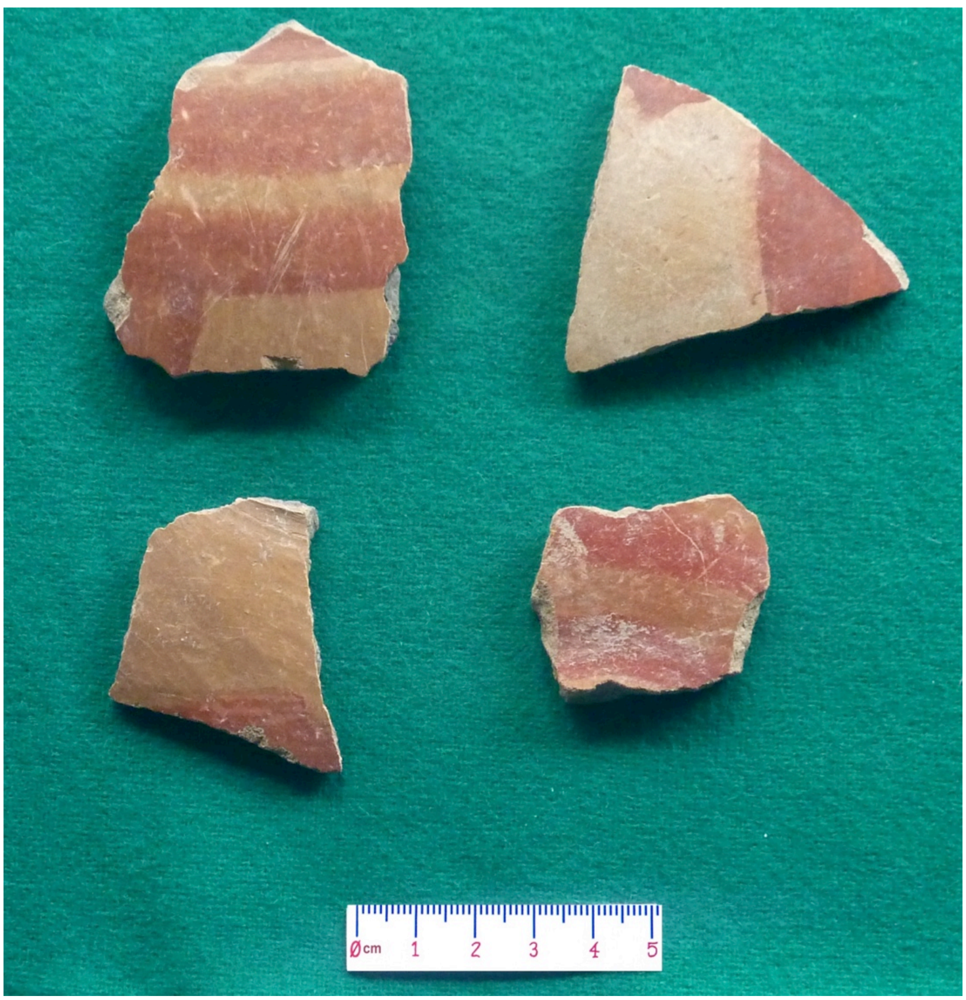


Figure A.43: Image showing exterior decoration on globular Bordo Rojo Sobre Café ollas.

Figure A.44: Image showing Bordo Rojo Sobre Café rims.

TYPE: **Café Burdo, Sin Nombre Formal** (Rough Brown, without a formal name)

VARIETY: *Cántaro* (Jug)

PASTE: The paste is rough and primarily consists of sand and pebbles (round and angular), there are also small crystals similar to mica and white, non-crystalline particles.

FINISH: A thin layer of slip. The exterior surface is burnished. The interior surface is rough.

FORM: Elongated, straight-divergent neck and a direct rim that is slightly everted. Some sherds have cylindrical handles joined to the body of the vessel, which are attached to the vessel at a vertical angle around the middle of the vessel body.

DECORATION: Not present.

FUNCTION: Used for food storage.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERNCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

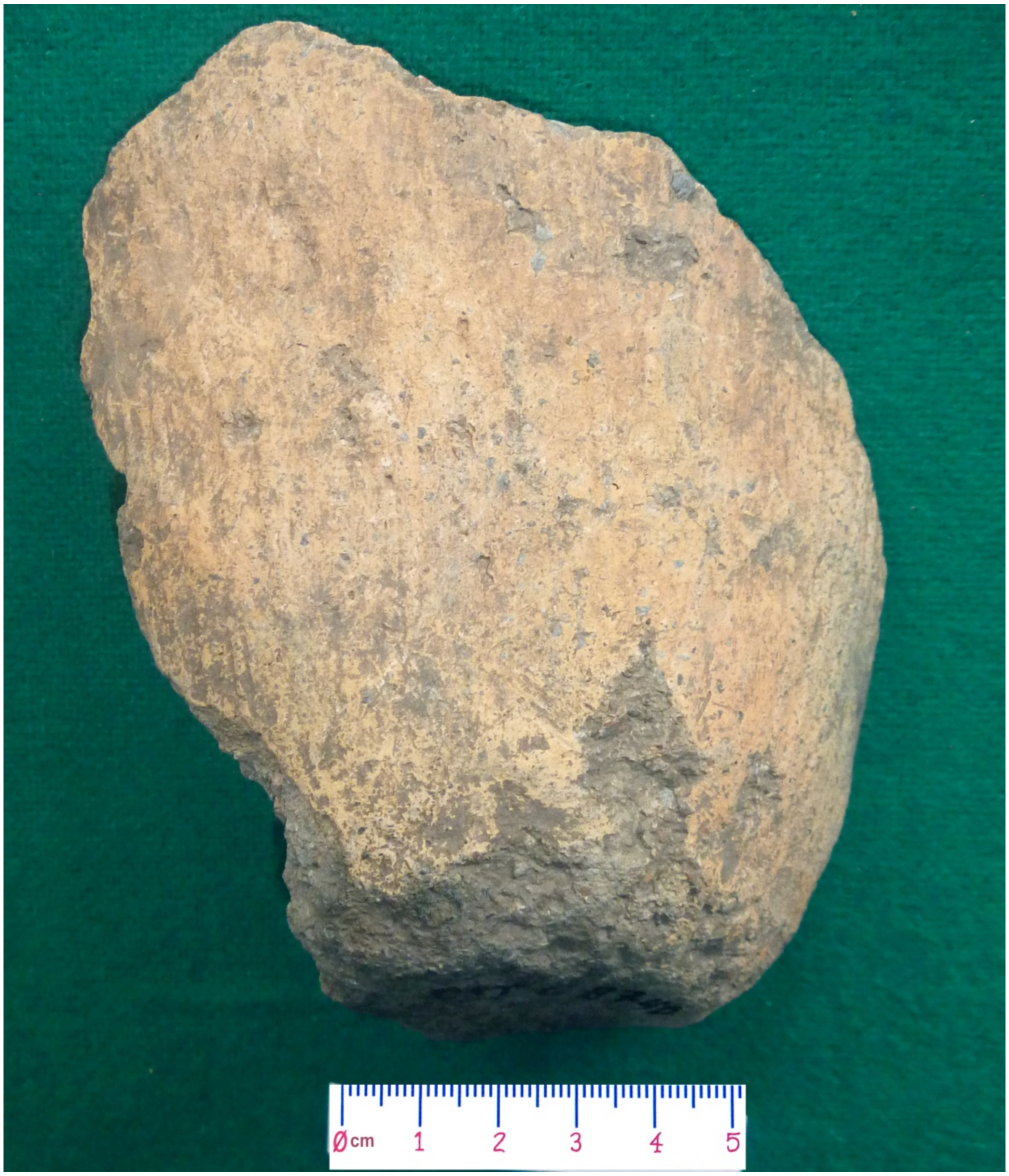


Figure A.45: Fragment of Café Burdo, Sin Nombre Formal, Cántaro variety

Figure A.46: Fragment of Café Burdo, Sin Nombre Formal, Cántaro variety

TYPE: **Café Burdo Inciso, Sin Nombre Formal (Incensario).** [Rough Brown Incised, without a formal name: censer]

VARIETY: Basket-style *incensario* (censer)

PASTE: Semi-compacted, rough-textured paste with large pieces of sand and black and white particles. The interior and exterior surfaces have patches from the incense burned inside of the vessel. The core of the vessel is also blackened.

FINISH: The interior and exterior surfaces are rough. The color of both surfaces varied between dark brown (5YR 5/3) and dark grey (5YR 4/1).

FORM: Censer with a basket shape, with slightly divergent walls and cylindrical or strap handles attached horizontally to the edges of the rim. The thickness of the walls is around 8 mm.

DECORATION: Decoration is found on the exterior of the vessels, with designs painted in dark red (10R 4/6) which consist primarily of rough designs consisting of undulating lines. At the base of the vessel there are distinctive deeply engraved or lightly engraved lines. "These lines, sometimes up to 3 mm deep, are generally organized in diamond shapes, though they sometimes have rectangular motifs (similar to a chess board). It is not clear whether these engraved lines served a function, such as improving the circulation of air below the incense while it burned, or if [the decorative technique] simply served as decoration" (Cobena 1990:264, my translation).

FUNCTION: Used to burn incense.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.47: Image showing the incised decoration of Café Burdo Inciso, Sin Nombre Formal, Incensario de canasto.

TYPE: **Café Liso, Sin Nombre Formal (Vasija Efigie).** [Smoothed Brown, without a formal name (Effigy vessel]

VARIETY: Not specified

PASTE: Compact, fine-textured paste with black and transparent white particle inclusions. The color of the paste is light brown (7.5YR 7/3) and well-fired in an oxidized environment.

FINISH: The exterior and part of the interior are burnished. The interior surface is also rough. Interior and exterior surfaces commonly vary between light brown (7.5YR 7/3) and medium brown (5YR 6/4), though occasionally there is a light red slip (2.5YR 6/8).

FORM: Small effigy *olla* (pot) with wall thickness between 3 mm and 7 mm. Vessel diameter is about 5 cm.

DECORATION: Decoration consists of clay applications of very simplified facial features. A characteristic motif is eyes that are similar to coffee grains.

FUNCTION: Unknown.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.48: Fragment of an effigy vessel.

Figure A.49: Fragment of an effigy vessel.

Figure A.50: Fragment of an effigy vessel.

TYPE: **Cazuela Café, Sin Nombre Formal.** [Brown pot without a formal name]

VARIETY: Not specified.

PASTE: Semi-compact paste with a rough texture that has some dispersed black and white particles. The paste color is light brown (7.5YR 6/4) and the firing environment was reducing, producing a thick blackened core.

FINISH: Interior and exterior surfaces have a thin clay slip that is medium brown in color (5YR 6/4), with a burnished finish.

FORM: Pot with straight-divergent walls and rounded rims that protrude slightly toward the vessel exterior. The average thickness of the walls is 1.02 cm and the approximate vessel diameter of 50 cm.

DECORATION: None

FUNCTION: Used to cook foods.

CHRONOLOGY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.51: Image showing a rim sherd of the Cazuela Café, Sin Nombre Formal type

TYPE: **Cerámica Huaxteca.** [Huaxteca ceramics]

VARIETY: *Cajete* (dish)

PASTE: Compact, fine-textured yellowish-red (7.5YR 8/6) paste, well-fired in an oxidizing environment.

FINISH: Both exterior and interior surfaces have a very pale brown slip (10YR 8/2) that has been burnished.

FORM: Dish with hemispherical walls and a rounded direct rim. Wall thickness isa round 4 mm and the rim thickness is around 2 mm.

DECORATION: Decoration is a cream-colored slip on vessel interior and exterior. Ill-defined designs are painted in dark black (5Y 2.5/1). A wide (6 mm) band of black paint encircles the rim.

FUNCTION: Unknown.

CHRONOLOGY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

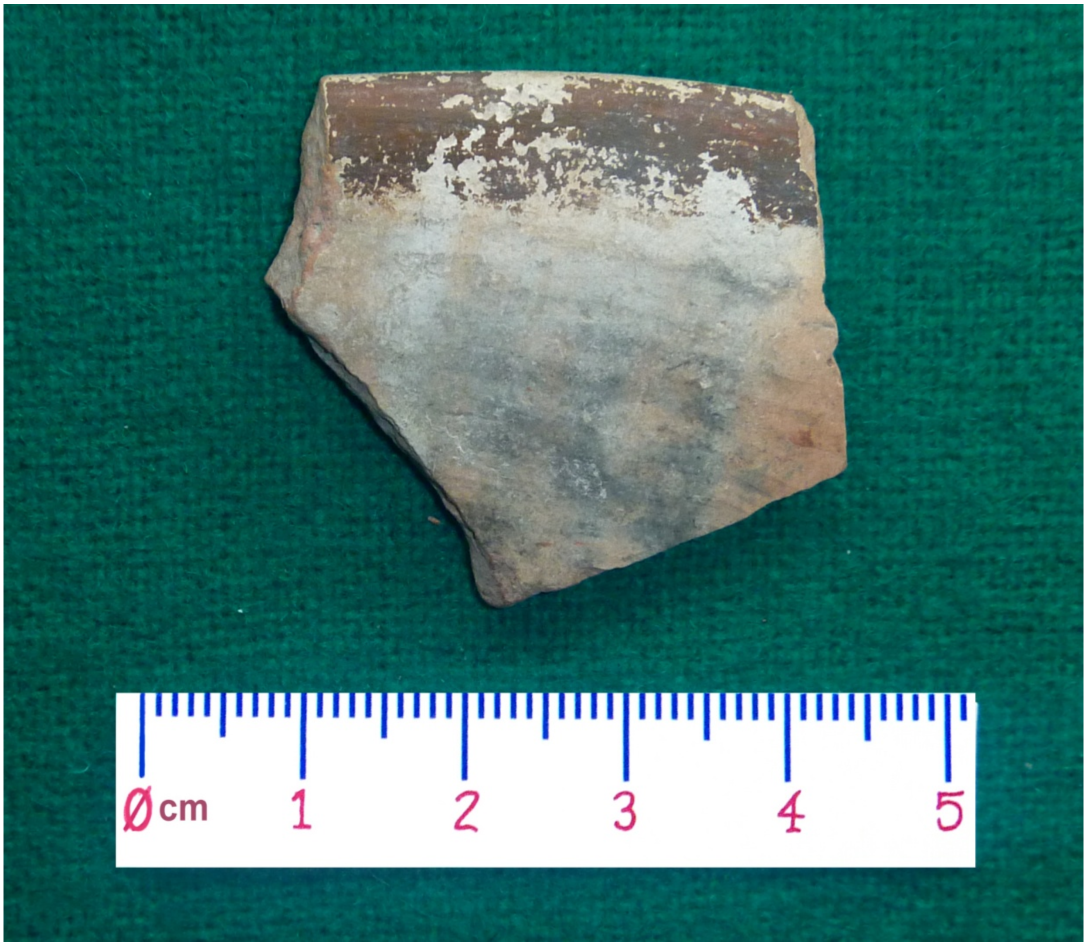


Figure A.52: Image showing the exterior of a Huaxteca dish.

Figure A.53: Image showing the interior of a Huaxteca dish.

TYPE: **Cerámica Huaxteca.** [Huaxteca ceramics]

VARIETY: Engraved dish

PASTE: Compact, fine-textured reddish-yellow (7.5YR 8/6) paste, well-fired in an oxidizing environment.

FINISH: The exterior surface has a white slip (7.5YR 8/1) that has been burnished. The interior surface has a light red (2.5YR 6/8) slip with a burnished finish.

FORM: Dish with hemispherical walls, which have an average thickness of around 5 mm.

DECORATION: Decorated with engravings on the exterior surface, cut into the cream slip. Engravings have horizontal parallel lines.
TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

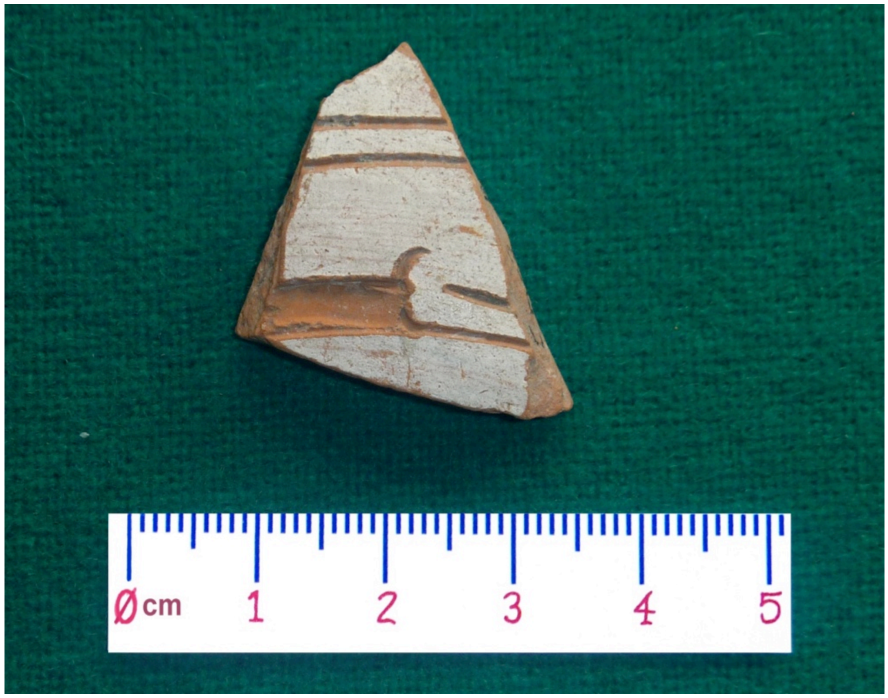


Figure A.54: Image showing the exterior of a Cerámica Huaxteca, Cajete esgrafiado variety sherd.

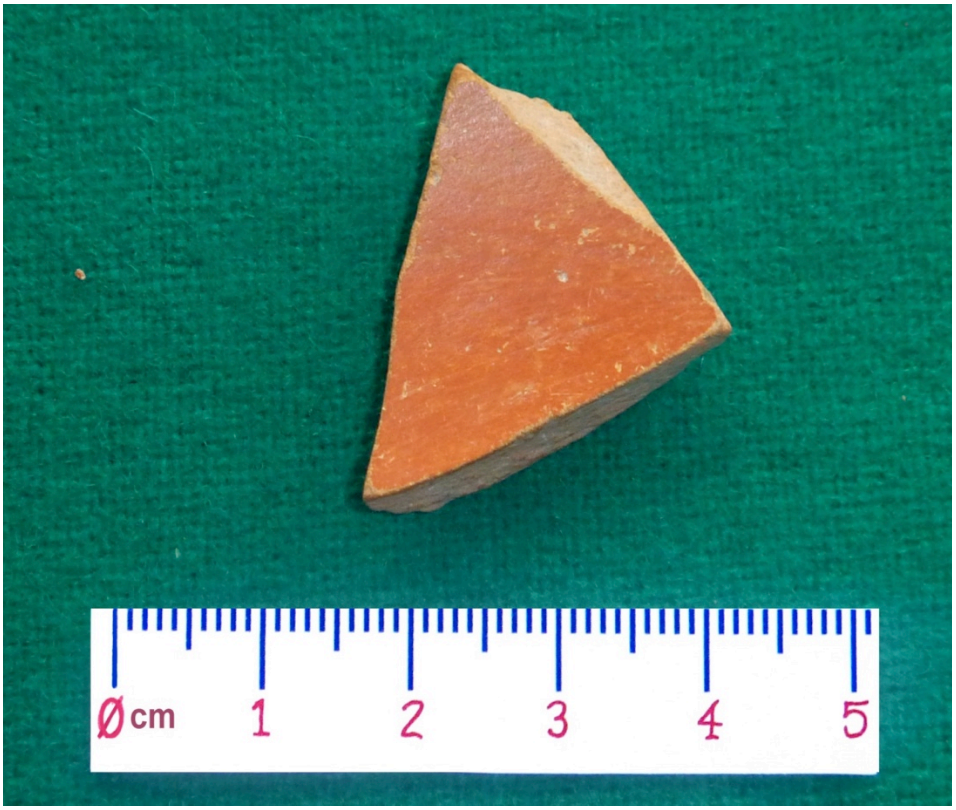


Figure A.55: Image showing the interior of a Cerámica Huaxteca, Cajete esgrafiado variety sherd.

TYPE: **Cerámica Huaxteca.** [Huaxteca ceramics]

VARIETY: *Jarra* (Jar)

PASTE: Compact, fine-textured paste that is reddish-white (7.5YR 8/2) in color. Well-fired in an oxidizing environment.

FINISH: The exterior surface has a smoothed finish and the interior is rough.

FORM: Globular-bodied jar, with a vessel thickness that varies between 4 mm and 7 mm.

DECORATION: Located on the exterior of the vessel body, where there are phytomorphic designs painted in dark black (7.5YR 4/6).

FUNCTION: Unknown

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.56: Huaxteca type, Jarra variety sherd showing the exterior portion of the vessel

TYPE: **Cerámica Huaxteca.** [Huaxteca ceramics]

VARIETY: Molcajete (mortar)

PASTE: Compact, fine-textured paste, very pale brown in color (10YR 8/3) well-fired in an oxidizing environment.

FINISH: Both interior and exterior surfaces have a very pale brown slip (10YR 8/4) with a burnished finish.

FORM: *Molcajete* (mortar) with a flat base. Wall thickness is around 7 mm.

DECORATION: On the exterior of the vessel, wide portions are painted in dark brown. On the interior there are also sections painted in dark brown, but these are not well-defined. The interior base of the vessel has deep incisions characteristic of *molcajetes.*

FUNCTION: Used to prepare food.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.57: Image showing the exterior of a Huaxteca, molcajete variety sherd with its dark brown decorations.

Figure A.58: Image showing the interior of a Huaxteca, molcajete variety sherd with its incisions.

TYPE: **Cerámica Huaxteca.** [Huaxteca ceramics]

VARIETY: *Olla* (pot)

FINISH: The interior and exterior of the vessel have a red slip (5YR 8/4) that is well-burnished.

FORM: Globular-bodied *olla* with a slightly everted neck and a direct flat rim. The wall thickness is between 5 mm and 9 mm, and the diameter of the mouth of the *olla* is around 25 cm.

DECORATION: In the exterior of the body of the vessel there are geometric designs painted in dark brown (7.5YR 4/6). On the body and neck there are also parallel lines that circle the neck and upper portion of the neck.

FUNCTION: Unknown

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.59: Image showing the spiral and linear designs on a Huaxteca *olla*.

Figure A.60: Image showing the horizontal and vertical designs on Huaxteca *ollas*.

TYPE: **Ira Anaranjado Sellado** (Ira Stamped Orange)

VARIETY: Not specified

PASTE: Semi-compact, medium-textured paste, which contains sand and black and white particle inclusions. The paste color is reddish yellow (7.5YR 7/8) and it is fired in an oxidizing environment.

FINISH: The interior and exterior surfaces are covered in an orange slip using the "*a brochazos*" (brushed) technique, in a similar fashion as the Jara ceramic type. On both surfaces the color varies between light orange (5YR 7/6) to medium orange (5YR 6/8) and has some dark splotches from firing.

FORM: Plate with a flat base, straight-divergent walls and solid button-shaped tripod supports. The vessel thickness ranges between 6 mm and 9 mm, and vessel rims are direct and rounded with a thickness between 4 mm and 7 mm. Vessel diameter is between 15 and 25 cm.

DECORATION: The exterior portion of the vessel has stamped designs that stand out approximately 1 mm from the vessel surface. The most common motifs are four-petal flowers and curvilinear lines that form flowers or leaves. Sometimes the lip of the vessel has a thin line painted in dark orange (2.5YR 5/8).

FUNCTION: Probably used to prepare and serve foods.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.61

Figure A.62

Figure A.63

Figures AA.61, AA.62, AA.63 show decorative motifs on the exterior of the Ira Anaranjado Sellado type.

TYPE: **Jara Anaranjado Pulido** (Jara Burnished Orange)

VARIETY: Jara

PASTE: Semi-compact, medium-textured paste with sand and some black and white inclusions. The color of the paste ranges between orange (7.5YR 8/6) and brown (5YR 6/4) and oxidized firing.

FINISH: Interior and exterior surfaces have a fine clay slip that is between light orange (5YR 7/6) and medium orange (5YR 6/8) in color. The slip is applied using the "*a brochazos*" (brushed) technique. Both surfaces have dark splotches from the firing process, which is more common on the exterior of the vessel.

FORM: Plate with a flat base, straight-divergent walls, and solid button tripod supports. The walls have an average thickness of 8 mm, and its direct rounded rims are between 4 mm and 6 mm thick. Vessel diameter varies between 15 and 25 cm.

DECORATION: The only decoration is a thin band painted on the lip of the vessel rim, which can be dark orange (2.5YR 5/8) or dark red (10YR 4/6).

FUNCTION: Probably used to prepare or serve foods.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

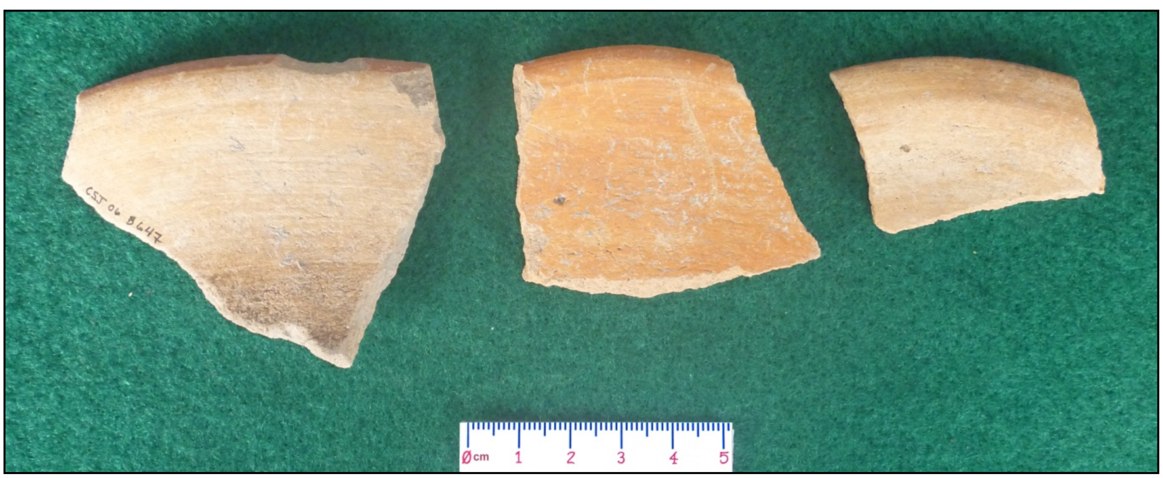


Figure A.64: Fragments of rim sherds of the Jara Anaranjado Pulido type.

Figure A.65: Part of a base fragment of the Jara Anaranjado Pulido type, showing a button support.

TYPE: **Jara Anaranjado Pulido** (Jara Burnished Orange)

VARIETY: Miniature

PASTE: Compact, medium-textured paste that includes sand and black and white particles. The paste has an orange color (7.5YR 8/6) fired in an oxidizing environment.

FINISH: Interior and exterior surfaces have a fine clay slip that is medium orange in color (5YR 6/8) which is applied in an "a brochazos" (brushed) fashion.

FORM: Small plate with solid button supports. The vessel walls are between 3 mm and 5 mm thick, while the width of the direct rounded rim is around 2 mm. Vessel diameter is around 5 cm and 10 cm.

DECORATION: None

FUNCTION: Unknown

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.67 Above, fragments of rim sherds of Jara Anaranjado Pulido, Miniature variety. Below, fragments of bases with supports of the Jara Anaranjado Pulido, Miniature variety.

TYPE: **Macana Rojo Sobre Café** (Macana Red-on-Brown)

VARIETY: Macana

PASTE: Compact, medium-textured paste with sand temper and dispersed black, white, and metallic particles. The paste color varies between light brown (7.5YR 6/4) and medium brown (5YR 6/4). In general the firing is oxidized, but sometimes reducing, producing a thin black core in the vessel wall profile.

FINISH: The exterior surface is slightly burnished, varying between light brown (7.5YR 6/4) and medium brown (5YR 6/4). The interior surface is burnished and its color is also light to medium brown, except for portions that are painted in red (10R 5/6) which have been more burnished. There are burned portions from firing on both surfaces.

FORM: Hemispherical tripod dish with hollow cylindrical supports and hollow effigy supports (representing animals). The wall thickness is between 6 mm and 8 mm, with direct rounded rims, or occasionally flat rims. These are around 5 mm thick. Vessel diameters are between 20 and 25 cm.

DECORATION: Primarily located on the vessel interior, where designs are painted in dark red (10R 4/6). A common design is a wide band around 1.05 cm, 2 cm or even 4 cm thick around the interior rim of the vessel, which extends to the vessel exterior. Semi-circular splotches that surround the interior of the rim are also common; these are accompanied by a red band that is found immediately beneath them. Most of the vessel supports of this type also have small areas painted in red.

FUNTION: Used to prepare and serve foods.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

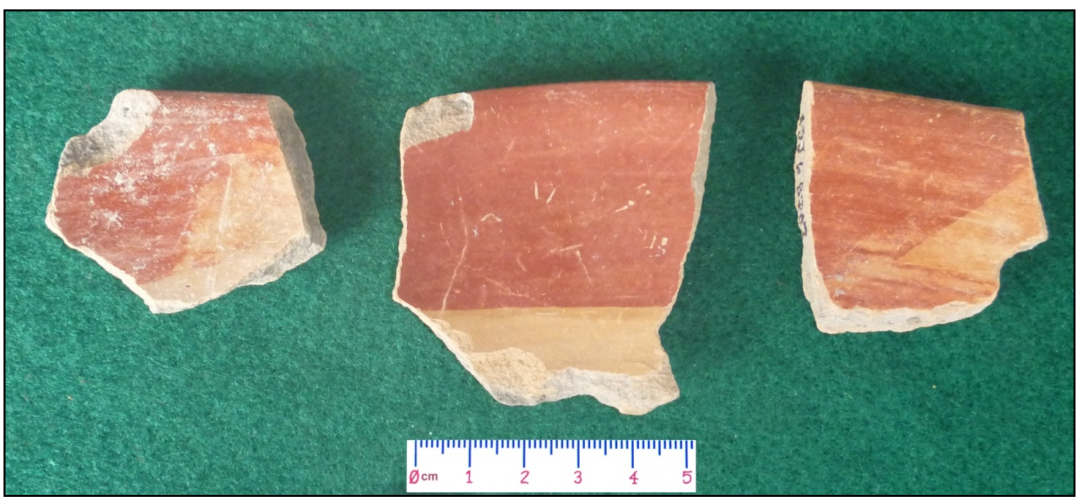


Figure A.68 Image that shows interior decoration of Macana Rojo Sobre Café.

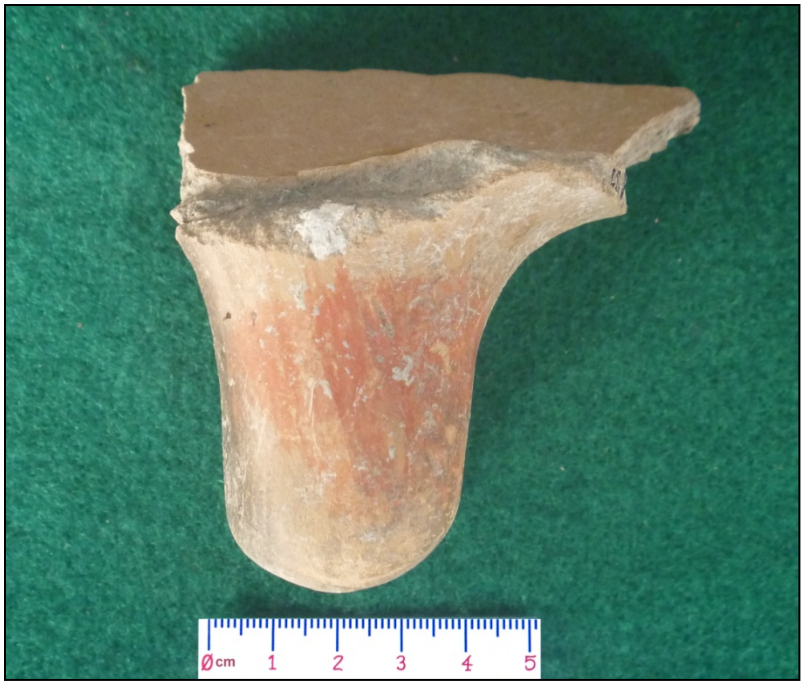


Figure A.69 Hemispherical support of the Macana Rojo Sobre Café type.

Figure A.70 Flat support of the Macana Rojo Sobre Café type.

TYPE: **Macana Rojo Sobre Café** (Macana Red-on-Brown)

VARIETY: Marcada (Marked)

PASTE: Compact, medium-textured paste with sand temper and dispersed black, white, and metallic particles. The paste color varies between light brown (7.5YR 6/4) and medium brown (5YR 6/4). Firing is reducing, producing a thin black core in the vessel wall profile.

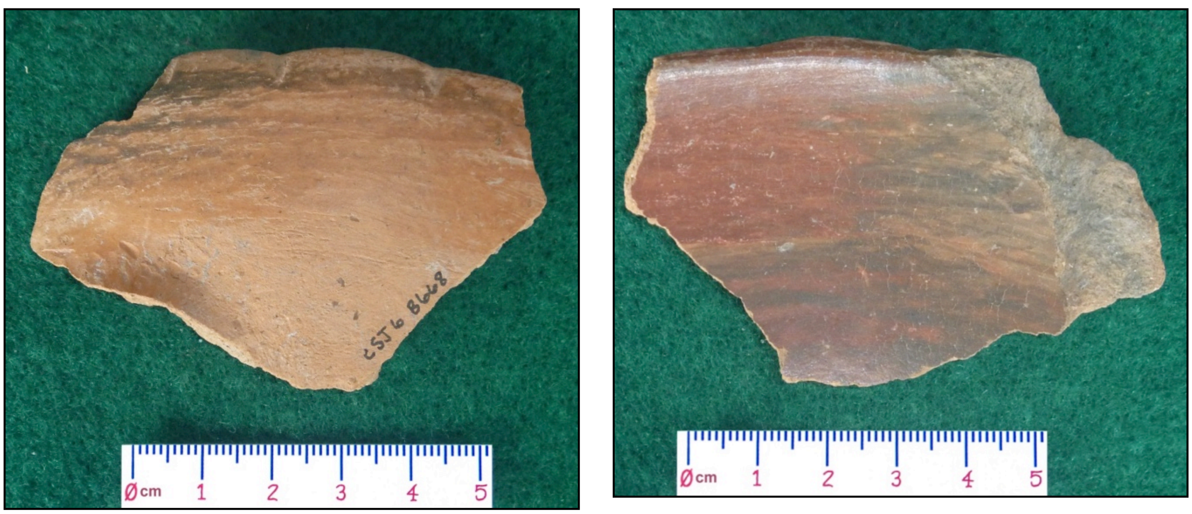
FINISH: The exterior surface is unevenly burnished and medium brown (5YR 6/4). The interior surface is burnished and its color is also light to medium brown, except for portions that are painted in red (10R 5/6) which have been more burnished. There are burned portions from firing on both surfaces.

FORM: Vessels are tripod dishes with hemispherical walls which are around 7 mm thick. Rims are direct and flat and around 5 mm thick. Vessel diameter is around 20 cm.

DECORATION: Characteristic design consists of vertical marks located on the exterior of the rim at intervals of approximately every 2 cm. The interior surface is also decorated with a wide band of dark red (10R 4/6) paint.

FUNCTION: Probably used as a vessel to prepare and serve foods.

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).



m n

Figure A.71: Exterior (m) and interior (n) of the Macana Rojo Sobre Café, Marcada variety.

TYPE: **Macana Rojo Sobre Café** (Macana Red-on-Brown)

VARIETY: Festonada (scalloped)

PASTE: Compact, medium-textured paste with sand temper and dispersed black, white, and metallic particles. The paste color varies between light brown (7.5YR 6/4) and medium brown (5YR 6/4). Firing is reducing, producing a thin black core in the vessel wall profile.

FINISH: The exterior has a smoothed finish with light burnishing. Its color is light brown (7.5YR 6/4). The surface interior shows a polished finish, especially in the areas that have been decorated in red.

FORM: Tripod dish with hemispherical walls whose walls had a width that was between 6 mm and 1 cm, with direct rounded rims that have a width of around 5 mm. Vessels varied between 15 cm and 25 cm.

DECORATION: This variety is characterized by its scalloped decoration which is present on the exterior lip of the vessel. The vessel interior is also decorated with wide bands painted in dark red (10R 4/6).

FUNCTION: Possibly used to serve and prepare food.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.71

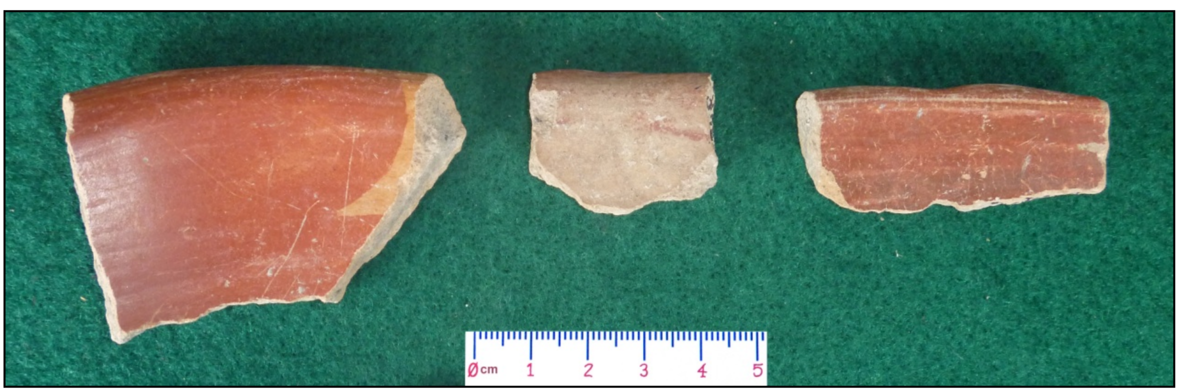


Figure A.72

Exterior portion (A.71) and the interior portion (A.72) of the Macana Rojo Sobre Café type, *festonada* variety.

TYPE: **Macana Rojo Sobre Café** (Macana Red-on-Brown)

VARIETY: Pintado al Negativo (Negative painted)

PASTE: Compact, medium-textured paste with sand temper and dispersed black, white, and metallic particles. The paste color is medium brown (5YR 6/4). Firing is reducing, producing a thin black core in the vessel wall profile.

FINISH: The exterior has a smoothed finish with light burnishing. Its color is light brown (7.5YR 6/4). The surface interior is also medium brown and portions are decorated in red (10R 4/6).

FORM: Tripod dish with hemispherical walls whose walls had a thickness of around 6 mm and with direct rounded rims that have a width of around 5 mm. Vessels diameter was approximately 15 cm.

DECORATION: The interior is decorated with designs painted in the negative; these are spirals and straight lines.

FUNCTION: Probably used as a vessel to serve and prepare foods.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

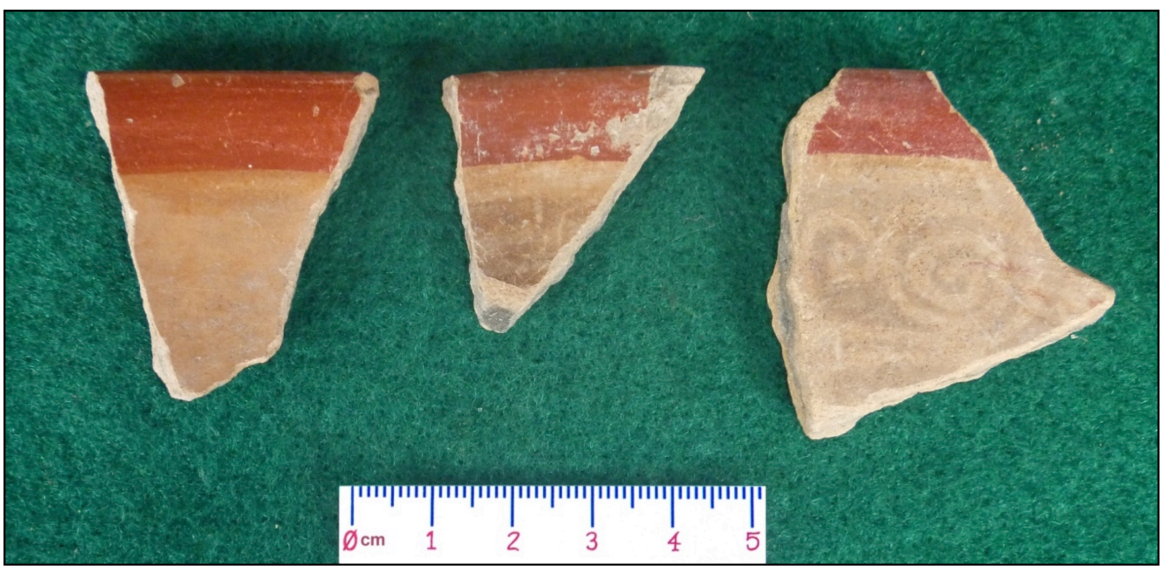


Figure A.73: Image that shows the interior decoration of the Macana Rojo Sobre Café, Pintado al Negativo variety vessels

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TYPE: **Manuelito Café Liso** (Manuelito Light Brown)

VARIETY: Not specified

PASTE: Paste is compact, medium-textured with sand temper and black, white, and metallic particle inclusions. The color of the paste varies between light brown (7.5YR 6/4) and medium brown (5YR 6/4) and a reducing firing environment environment that produced a blackened core; occasionally firing is oxidized.

FINISH: Interior and exterior surfaces are unevenly burnished. Surface color ranges between medium brown (6YR 6/4) to dark grey (5YR 5/3). Surfaces often have dark stains from the firing process.

FORM: Tripod dish with hemispherical, straight-divergent walls with zoomorphic supports that can be the heads of animals, such as dogs and birds. The width of the walls varies between 5 mm and 7 mm. Rims are flat and occasionally rounded and around 3 mm thick, with a diameter that varied between 15 cm and 20 cm.

DECORATION: Consists of shallow incisions that go from the interior to the walls and base of the vessel.

FUNCTION: Possibly used to grind and store foods.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.74: Interior portion of the tripod Manuelito Café Liso vessel.

Figure A.75: Base of the Manuelito Café Liso vessel.

Figure A.76: Manuelito Café Liso supports

Figure A.77

q

Figure A.78

Figures A.77 and A.78 show different views of a Manuelito Café Liso zoomorphic support.

TYPE: **Mendrugo Semializado** (Mendrugo semi-smoothed)

VARIETY: Not specified.

PASTE: The paste is semi-compact and has a medium texture that has coarse sand temper and dispersed black, white, transparent, and metallic inclusions. The paste color is medium brown (5YR 6/4) with oxidized firing.

FINISH: The interior surface is smoothed, while the exterior is slightly rougher; an "a brochazos" (brushed) technique was used to create horizontal lines on the exterior. Both surfaces vary in color between light brown (7.5YR 6/4) and dark brown (5YR 5/3).

FORM: *Comal* (griddle) with a tall rim and an average wall thickness of 9 mm. The rounded rims are between 7 mm and 9 mm thick, and vessel diameter is around 60 cm.

DECORATION: None

FUNCTION: Probably used to make tortillas and other foods.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.79: Rim fragments of Mendrugo Semializado.

TYPE: **Negro Sobre Anaranjado, Sin Nombre Formal (Olla).** Tollan-phase Black-on-Orange, without a formal name

PASTE: Semi-compacted, rough textured paste that has transparent cristal inclusions mixed with black and white particles. The color is light grey (7.5YR 6/2), with reducing firing environment that produced a very thin black core.

FINISH: The exterior and interior surface of the rim has a thin covering of a clay slip that varies between dark orange (2.5YR 5/8) and dark red (10R 4/6) that is moderately burnished. The interior body has a rough finish that preserves the natural color of the paste, which is a light grey (7.5YR 6/2).

FORM: Olla with an oval form, with a cylindrical neck and a slightly everted rim. The thickness of the walls is around 6 mm and 7 mm.

DECORATION: Decoration is in black lines painted before firing that are found on the exterior surface of the vessel neck and the upper portion of the body of the olla. Motifs are usually pieces of horizontal lines and parallel lines about 3 mm wide.

FUNCTION: Probably food storage or preparation.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.80: Fragments of Negro Sobre Anaranjado, Sin Nombre Formal (Olla) type.

TYPE: Plumbate

VARIETY: Not specified

PASTE: Compact, extremely finely textured paste, with a nucleus that is dark grey (5YR 4/1) and edges that are partially oxidized that are light grey, or completely oxidized and light to medium orange in color.

FINISH: The interior and exterior surfaces have a lustrous slip that is usually a bright metallic grey or shiny orange.

FORM: In this type there are different forms, including zoomorphic and anthropomorphic vessels, as well as pumpkin shapes. In our sample sherd thickness is around 3 mm and the form is unknown.

DECORATION: On the vessel exterior there are sometimes shallow incised designs, and one sherd has circular clay applications.

FUNCTION: Unknown.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.81: Image showing Plumbate sherds with the types characteristic lustrous slip.

TYPE: **Proa Crema Pulido** (Proa burnished Cream)

VARIETY: Proa

PASTE: Semi-compacted, medium textured paste that contains sand as well as black and white particles. The color of the paste varies between light brown (7.5YR 6/4) and light orange (5YR 7/6). In some cases the firing is oxidized and in others it is reduced, producing a thin blackened core.

FINISH: Interior and exterior surfaces have a cream slip (10YR 8/2) with varied burnishing. In some cases there are dark spots from imperfect firing.

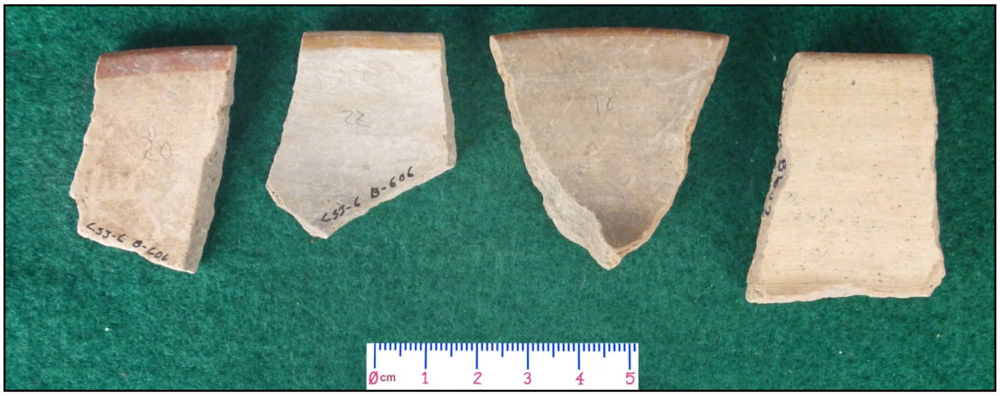
FORM: The most common form is a plate with a flat base, straight-divergent walls and solid button supports. The walls are around 7 mm thick, with direct rounded rims that are around 5 mm thick, and vessel diameter is between 20 and 25 cm. Finally, this type has some forms that correspond to a miniature vessel around 10 cm in diameter.

DECORATION: The rims are frequently encircled with a dark orange band (2.5YR 5/8) or a dark red band (10R 4/6).

FUNCTION: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

rr



r

s

Figure A.82 (r, rr, and s), show Proa Crema Pulido type. The darker rim decoration and tripod button support are visible in the photographs.

TYPE: **Rebato Rojo Pulido.** (Rebato Burnished Red)

VARIETY: Not specified.

PASTE: Semi-compact, medium-textured paste that contains sand and some black and white particles that are moderately distributed, along with metallic particles that are more common. The paste color is generally light brown (5YR 6/4) and occasionally light orange (5YR 7/6) and it is usually well-fired in an oxidizing environment.

FINISH: On both interior and exterior surfaces there is a thin layer of fine clay slip whose color ranges between light red (10R 5/6) and medium red (10R 5/8) that is burnished.

FORM: Shallow plate with supports and a flat base that may have slightly convex wall and sometimes straight walls. Walls are between 5mm and 7 mm thick with direct rounded rims that are around 3 mm thick. Vessel diameter is between 15 and 20 cm.

DECORATION: None.

FUNCTION: Used to prepare and serve foods.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERNECES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.83: Image showing vessel sherds of the Rebato Rojo Pulido type.

TYPE: **Rojo Sobre Café, Sin Nombre Formal (Incensario de Sartén)** [Red-on-Brown, without a formal name (Frying pan style censer)]

VARIETY: Not Specified

PASTE: Semi-compact, medium-textured paste with sand and some dispersed white, black, and metallic inclusions. The color of the paste is light brown (7.5YR 6/4). Firing is usually in an oxidizing environment but is occasionally reducing, creating a slight blackened core.

FINISH: Interior and exterior surfaces have a burnished finish. The color of both surfaces is between light brown (7.5YR 6/4) and medium brown (5YR 6/4).

FORM: The form is a Frying-pan style censer that has a tubular hollow handle. The pan portion of the vessel has straight walls with an average thickness of 7 mm with perforations that likely served to circulate air. The most common rims were flat with an average thickness of 5 mm. Vessels have an average diameter of around 25 cm.

DECORATION: Decoration is primarily on the vessel interior, sometimes painted before firing and sometimes afterward. The interior of the vessel rim is painted with a dark red band (10R 4/6), though bands are sometimes found in red or blue at the middle of the vessel. Other common decorations are solid red circles on the vessel body, while the handles have vertical red bands.

FUNCTION: Probably used in religious rituals to burn incense.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.84: Image showing decoration on the interior of the pan portion of the Rojo Sobre Café, Sin Nombre Formal (Incensario de Sartén) type.

Figure A.85: Image showing the portion of Rojo Sobre Café, Sin Nombre Formal (Incensario de Sartén); these fragments show where a handle would have been joined to the vessel body.

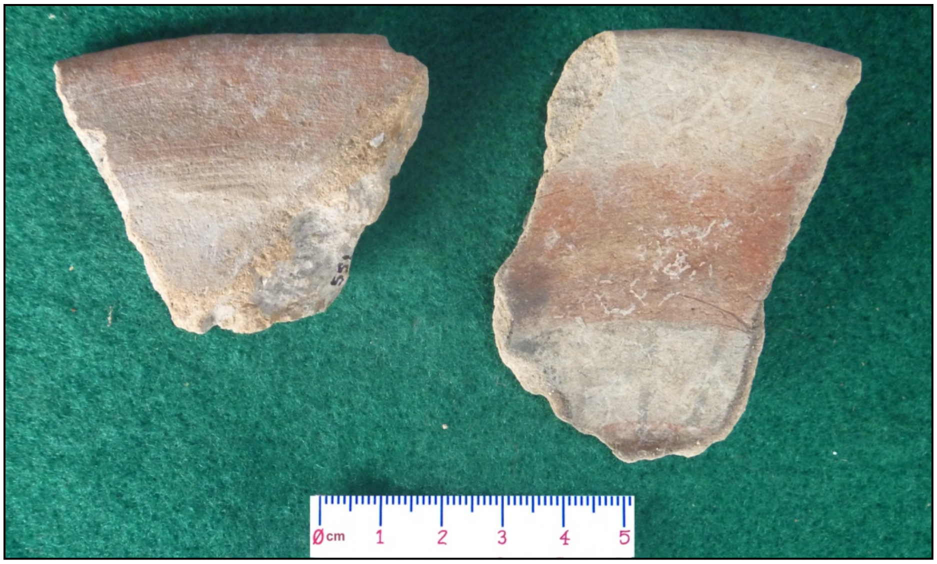


Figure A.86: Two fragments of Rojo Sobre Café, Sin Nombre Formal (Incensario de Sartén). The fragmento n the left shows the red decorative band at the vessel rim, while the fragmento n the right shows the band toward the middle of the vessel.

Figure A.87: Fragment of Rojo Sobre Café, Sin Nombre Formal (Incensario de Sartén), showing a fragment of the vessel's handle.

TYPE: **Soltura Rojo Alisado.** (Soltura Burnished Red)

VARIETY: Not specified

PASTE: Semi-compact, medium-textured paste with sand and a moderate quantity of black, white, and metallic particles. The color of the paste is brown (5YR 6/4) with a reducing firing environment environment that produced a blackened core.

FINISH: The exterior and interior rims have a thin covering of a dark red clay slip (10R 4/6) with a burnished finish. The interior of the vessel has the rough texture of the natural clay.

FORM: Large olla (pot) with a globular body. Vessel walls are relatively thin, with an average thickness of 1.00 cm and a slightly everted rim.

DECORATION: None

FUNCTION: Possibly used to store grains and liquids.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERNCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.88: Image showing rims of the Soltura Rojo Alisado vessel type.

Figure A.89: Image a portion of the vessel body of the Soltura Rojo Alisado vessel type.

TYPE: **Sillón Inciso** (Sillón Incised)

VARIETY: Cajete Trípode (Tripod Dish)

PASTE: Medium-textured, compact paste that has rare white particle inclusions. The paste color is light orange (5YR 7/6). Well-fired in an oxidizing environment.

FINISH: Exterior and interior surfaces have a fine clay slip that varies in color between light orange (5YR 7/6) and medium orange (5YR 6/8). Both surfaces are burnished.

FORM: Tripod dish with hollow spherical tripod supports, which has curving-divergent walls that are between 4 mm and 7 mm thick. The direct rounded rims are around 3 mm thick. Vessel diameter varies between 20 cm and 25 cm.

DECORATION: Decoration consists of incised lines on the vessel exterior. Common incised motifs are parallel horizontal lines that surround the vessel body. Sometimes there are more elaborate incisions that consist of panels of diagonal lines and spirals.

FUNCTION: Probably used to prepare and serve foods in ritual and non-ritual contexts.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

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Figure A.90

u

Figure A.91

v

Figure A.92

Images t, u, and v, show various portions of the Tipo Sillón Inciso, Cajete trípode variety and its characteristic incised designs. Image v shows a few examples of the vessel's tripod supports.

TYPE: **Sillón Inciso** (Sillón Incised)

VARIETY: Cántaro (Jug)

PASTE: Medium-textured, compact paste that has rare white particle inclusions. The paste color varies between light brown (7.5YR 6/4) and light orange (5YR 7/6). Well-fired in an oxidizing environment. In rare cases, the firing environment was reducing, producing a thin blackened core.

FINISH: Exterior surface and the interior rim and neck surface have a fine clay slip that varies in color between light orange (5YR 7/6) and medium orange (5YR 6/8). Both surfaces are burnished. The interior surface is smoothed.

FORM: Vessel with a cylindrical neck and a pumpkin-shaped body. The vessel rims may be rounded and around 3mm or flat and around 8 mm thick. Vessel rim diameter is around 10-15 cm.

DECORATION: The vessel's characteristic decoration is its pumpkin-shaped form.

FUNCTION: Possibly used by elites, or for ritual purposes.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.93

Figure A.93

Figure A.94

Images AA.92, AA.93, and AA.94 show Tipo Sillón Inciso, Cántaro variety vessel fragments.

TYPE: **Sillón Inciso** (Sillón Incised)

VARIETY: Cajete Hemisférico (Hemispherical dish)

PASTE: Medium-textured, compact paste that has rare white particle inclusions. The paste color varies between light brown (7.5YR 6/4) and light orange (5YR 7/6). Well-fired in an oxidizing environment.

FINISH: Interior and exterior surfaces have a fine clay slip that is well-burnished. ON both surfaces the color varied between light orange (5YR 7/6) and dark orange (2.5YR 5/8).

FORM: Dish with hemispherical walls that are between 4 mm and 8 mm thick. In general the rims are rounded and around 3 mm thick and sometimes flat, in which case they are around 4 mm thick. Vessel diameter varies between 10cm and 15 cm.

DECORATION: The vessel exterior has incised designs, usually parallel horizontal lines on the majority of the vessel body. A horizontal line around the vessel rim or short parallel lines also delimit more elaborate motifs.

FUNCTION: Possibly used to prepare or serve foods in ritual and non-ritual contexts.

TEMPORALITY: Tollan phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.95: Image showing rim sherds of Sillón Inciso, Cajete Hemisférico variety

Figure A.96: Image showing Sillón Inciso, Cajete Hemisférico variety sherds with more elaborate design panels.

TYPE: **Tarea Rojo Pulido** (Tarea Burnished Red)

VARIETY: Not specified

PASTE: Semi-compact, medium-textured paste that contains sand and dispersed black and white particles. The color of the paste is light brown (7.5YR 7/3). Fired in an oxidizing environment and less frequently in a reducing environment that produced a thin blackened core.

FINISH: The exterior and interior surfaces have a layer of fine red clay slip (10R 5/6 to 10R 4/6) with a burnished finish. The interior of the body is rough.

FORM: Miniature olla with a cylindrical neck with a slightly everted rim, a globular body, and a rounded or flat rim. The wall thickness varies between 6 mm and 8 mm, with rounded rims that have an average width of around 3 mm. The diameter at the vessel mouth is between 3 cm and 6 cm.

DECORATION: None

FUNCTION: Unknown

TEMPORALITY: Tollan Phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

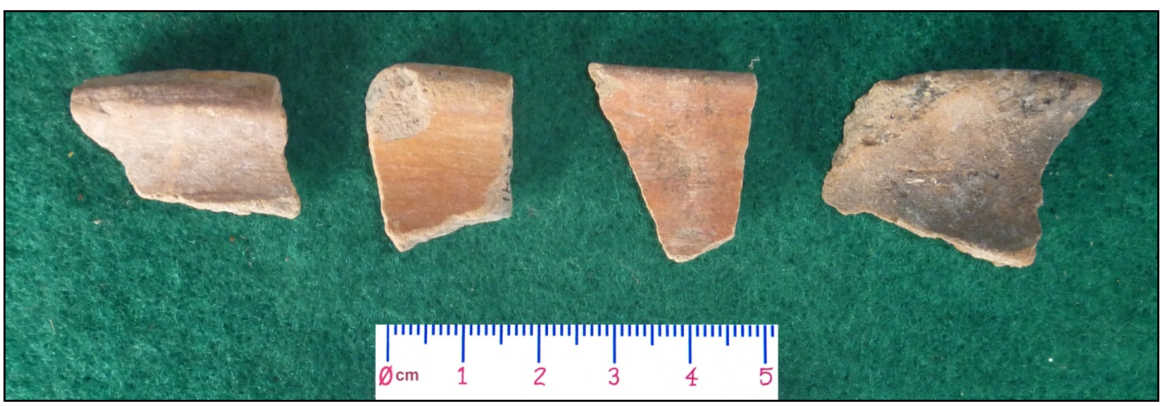

Figure A.97: Image showing the rims of the Tarea Rojo Pulido type.

TYPE: **Toza Café Alisado** (Toza Smoothed Brown)

VARIETY: Not specified

PASTE: Semi-compacted, rough-textured paste that contains sand and a moderate quantity of black and white particles. The color of the paste is light brown (7.5YR 6/4). In general the firing is in a reducing environment, producing a thin blackened core, but is occasionally oxidized.

FINISH: Interior and exterior surfaces are burnished. On the interior surface it is common to observe horizontal ridges, and on the exterior surface there are often small cracks that resemble fractures. The color of both surfaces varies between light brown (7.5YR 6/4) and medium brown (5YR 6/4). The exterior of some sherds has dark stains caused by fire.

FORM: The most common form is a dish with curving-convergent walls and a flat base that sometimes has small horizontal cylindrical handles attached at the rim. The wall thickness varies between 6 mm and 9 mm, and its rounded rims vary between 6 mm and 8 mm. Vessel diameter is between 15 cm and 40 cm.

DECORATION: None.

FUNCTION: Probably used to cook foods.

CHRONOLOGY: Tollan Phase (900-1150 A.D.)

REFERENCES: Cobean 1990, Suárez Cortés and Nieto Ugalde (2013).

Figure A.98: Image showing the Toza Café Alisado type. The most common form is a dish with curving convergent rims.

Figure A.99: Image showing the Toza Café Alisado type. The most common form is a dish with curving convergent rims.

AZTEC FAMILY

GENERAL NOTES ON FORMS:

For this analysis, I followed Parsons (1966:126-127, often following Peterson 1958) and Rodríguez Alegría (2002) in defining the following general forms:

Bowl: "A vessel with a height less than, but not under 1/3 of its diameter." (Parsons 1966:126)

Dish: "A vessel with an unrestricted orifice, the height of which is between 1/3 and 1/5 of its diameter. Also described as a shallow vessel" (Parsons 1966:126-127). As Parsons notes, the boundaries between bowls and dishes, and dishes and plates, are not extremely precise.

Plate: "A very shallow unrestricted vessel, the height of which is less than 1/5 of its diameter." (Parsons 1966:127)

Basin: "simply a relatively large and massive bowl form." (Parsons 1966:127)

Jar/*Olla*: "A vessel whose height is approximately equal to or greater than its greatest diameter, and has a restricted neck." (Parsons 1966:127, note that Parsons does not use the term *Olla* but it is a highly emic vessel category that is used by many other Mesoamericanists)

Tecomate: Vessels with restricted rims, without necks. Often globular.

Copa: Goblet shaped like a cup that has a pedestal base (Rodríguez-Alegría 2002:425)

Cazuela: Large cooking basins (Rodríguez-Alegría 2002:425) with flat bottoms.

Censers (*Incensario* or *Sahumador*): Generally bowls with long tubular handles, often with perforations.

Brazier (*Brazero*): Usually large vessels used to burn wood or incense in houses or public settings.

<u>ORANGE WARES</u>

ORANGE WARE TYPE: BLACK-ON-ORANGE

Black-on-Orange decorated wares are the most important type in this typology and others for chronological studies (Parsons 1966:181, 453-454).

PASTE: Black-on-Orange family vessels have a compact paste that is orange to light brown in color, and sometimes has a blackened core (Parsons 1966:136-137). Parsons estimated that temper for this type comprises around 5-15% of the paste and is fine- to- medium coarse, comprised of equal parts of small, transparent, black, and transluscent particles (Parsons 1966:137).

FORMS: Though in this dissertation I did not base conclusions on vessel forms, we did note vessel forms in our typology. Forms included bowls, basins, *molcajetes* (mortars), plates, and dishes. Vessel wall thickness and vessel diameters for the various forms of this type are delineated in Parson's dissertation (1966:178-180). Jeffrey Parson's dissertation (1966) includes a detailed analysis of vessel forms and decorative motifs that are found on each vessel form.

FINISH: Exterior and interior surfaces are smoothed and painted with black designs.

DECORATION: For the purposes of this analysis, I will explain the simplified system that we used to distinguish between Aztec II, III, and IV decorative motifs. Readers should note that Parson's dissertation utilized and refined earlier typologies, including Jose Luis Franco's (1945) report on Aztec II ceramics from Tula. Chronological distinctions are chiefly based on decorative techniques, which divide into two broad temporal zones. Aztec I and Aztec II vessels comprise the "Early Aztec" complex (1150-1350 A.D.), while Aztec III and Aztec IV vessels comprise the "Late Aztec" complex (1350-early colonial period). The subtypes explained below explain the decorative techniques common to each chronological period.

-AZTEC II

Leah Minc, Mary Hodge, and M. James Blackman (1994) provide a simplified typology for Early Aztec (Aztec I and Aztec II) sherds. I did not find Aztec I sherds in my excavations, which was to be expected since Aztec I pottery is more commonly found south of the Basin of Mexico (Brumfiel 2005:117, Parsons 1966:363), but less commonly in the north, where Tula is located. I therefore limit my discussion to the Aztec II portion of Early Aztec ceramics. Though data from some sites indicate that Aztec I and Aztec II ceramics are chronologically distinct, they are currently mixed together for dating purposes as "Early Aztec" and dated to circa 1150-1350 A.D. (Brumfiel 2005:117).

Minc et. Al. (1994:144-147) divide the Aztec II typology into two principal stylistic patterns: Geometric Tenayuca, and Calligraphic Tenayuca. Geometric Tenayuca motifs. Geometric Tenayuca consists of panels of geometric designs that surround the interior walls of dishes, plates, and *molcajetes* (mortars or grater bowls). Motifs, commonly step-frets or feather-and-scroll, are outlined black and the negative space is filled with fine lines (Minc et. al. 1994:144). *Zacates* (grass-like decorative elements, see Chapter 3). may be bounded or free in this complex. Calligraphic Tenayuca consists of "a wall panel with a series of vertical squiggles, circles, half-circles, and loops that resemble a handwriting exercise." *Zacates* in this style are never bounded. Minc et. al (1994:148-149) have used neutron activation analysis to show that these stylistic categories correlate well with distinctions in chemical signatures of the clay vessels, that is, the chemical composition of the clay vessels with geometric designs is distinct from that of the calligraphic style.

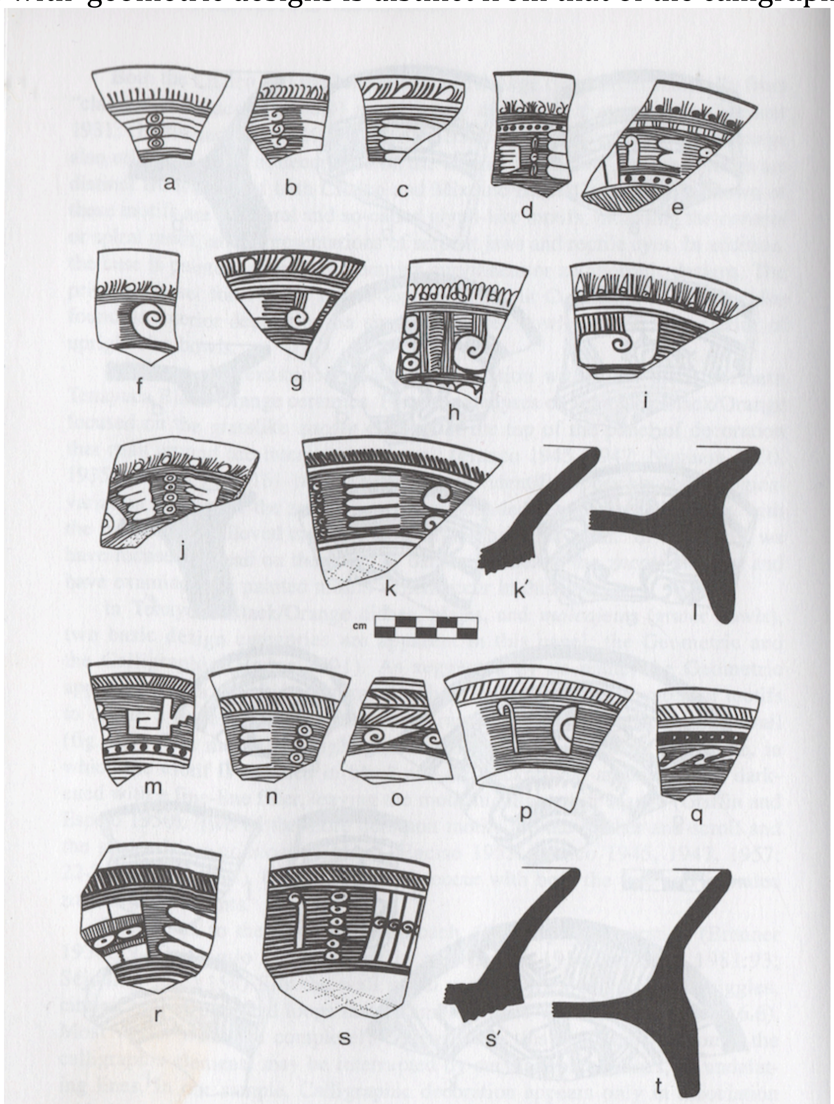

Fig. 6.5. Geometric Tenayuca Black/Orange: Plates, dishes, and *molcajetes* with free *zacate (a-k)* and bounded *zacate (m-s)*. Common geometric motifs include the feather or wing motif *(c, d, e, j, k, n, r)*, the scroll *(f-i)*, and the *xicalcoliuhqui (m)*. (Dish and *molcajete* profiles *l* and *t* redrawn from Parsons 1971:fig. 76.)

Figure A.100 Aztec II Black-on-Orange "Geometric Tenayuca" style. Image in Minc et. al. 1994:146, Figure 6.5

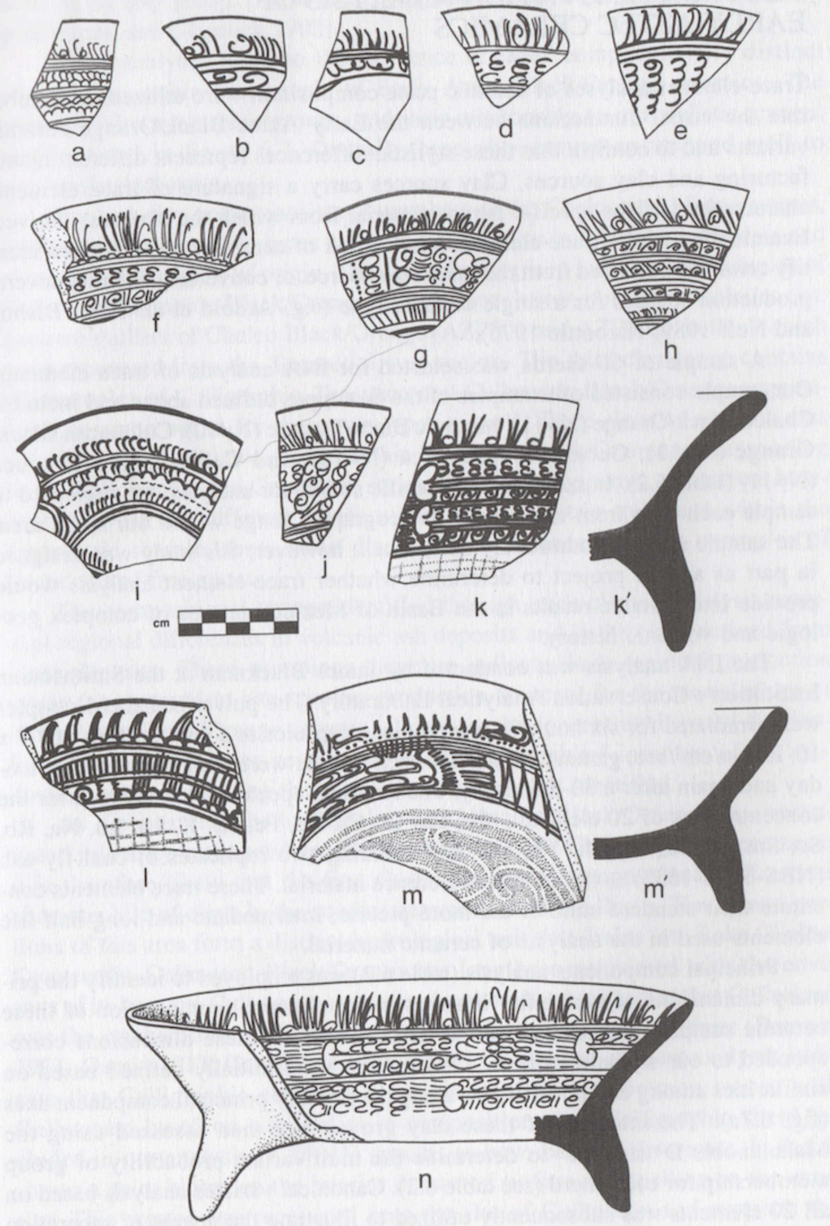

Fig. 6.6. Calligraphic Tenayuca Black/Orange: Plates, dishes, and *molcajetes.* Influence from the Culhuacan style is evident in the serpent jaw motifs and stamped base present on *m.* (Vessel *n* redrawn from Séjourné 1970:fig. 110.)

Figure A.101 Aztec II Black-on-Orange “Calligraphic Tenayuca” style. In Minc et. al. 1994:147, Figure 6.6

Figure A.102**:** Examples of Aztec II ceramics. Vessel wall diameter 5-6.5 mm. Left sherd from Operation 6, Context 8; Right sherd Operation 6, Context 49.

-AZTEC III

Decorative motifs in the Early Aztec (Aztec II Black-on-Orange) style evolved over time to reduced geometric styles. In contrast to the thick black paint and complex motifs of earlier Black-on-Orange vessels, Aztec III motifs may be painted in extremely thin black paint, almost as if they had been drawn by a pen. As noted in Chapter 3, the Late Aztec period *zacate* (grass-like decorative element) is usually greatly reduced or replaced. It may become a series of short vertical lines, reduced loops, a series of dashes, solid dots, or short loops that are bounded by thin horizontal lines (Parsons 1966, Brumfiel 2005:127, 129 Figure 4.7). Sometimes parallel rows of horizontal lines and dots or dashes run above decorative panels that feature simplified step-frets, scrolls, and circles outlined in thin black paint. It should be noted that Aztec III sherds significantly outnumbered Aztec IV sherds in the colonial-era comparative contexts that I described in Chapter 7 (see Chapter 7, Tables 7.7, 7.8, 7.9, 7.10, 7.11, 7.12).

Figure A.103: Selected examples of Aztec III ceramics. Vessel wall width between 4-4.5 mm. Examples from various excavation contexts at the Cathedral location.

Figure A.104: Aztec III vessel with variable loop motif.

-AZTEC IV

Aztec IV vessel motifs reintroduce thicker black lines. The decorative panels are characterized by thick black lines that sometimes alternate with sets of thin black parallel lines, and curvilinear scrolls are also common. Vessels often feature naturalistic motifs, such as birds or feather balls, and this trend appears to peak in the colonial period. In Chapter 7 I showed an example of a colonial-era example of Aztec IV.

Aztec IV reached its florescence in the Early Colonial (post-1521) period, and some researchers, such as Thomas Charlton (1976:521) consider it a Colonial-era innovation that supplanted the Aztec III tradition. However, in my sample both Aztec III and Aztec IV (Late Aztec) sherds were present in Early Colonial contexts, and Aztec III was still much more abundant in the colonial contexts at both the Open Chapel and Cathedral sites. Further, I do not presently know of research that conclusively shows that Aztec IV is exclusively colonial, though it is certainly most abundant in that period. I have therefore treated it as a transitional (late Aztec and early colonial) ceramic, i.e. I have assumed that the presence of Aztec IV ceramics implies at least a very late pre-Columbian context, but not necessarily a colonial one, unless these were accompanied by other conclusive markers of the colonial period (i.e. glazed ceramics, European animal remains, etc.). For reference for this type, also see Hernández Sánchez 2012.

Figure A.105: Aztec IV ceramics, with sherds that illustrate the curvilinear scroll decorative motif.

Figure A.106: Aztec IV ceramics (primarily molcajetes, or mortars) with groups of thick diagonal lines and "featherball" (bottom left and top right) and circle motifs. Several of these examples are molcajetes, as is evident from their incised interior bases.

Figure A.107: Aztec IV ceramics, showing sherds in which decorative motifs consist of sets of thick and thin black parallel lines.

-BLACK-ON-ORANGE MISCELLANEOUS

In this analysis, used "miscellaneous" as a catch-all category for various rare or temporally non-diagnostic Black-on-Orange sherds, including *tecomates* (globular jars without necks), miniature vessels, and unattached slab supports such as those pictured in Figure A.108 and AA.109 below. Slab supports would have attached to Black-on-Orange bowls, dishes, and *molcajetes*. In our sample, these had common decorative themes, such as horizontal or vertical lines, four-circle motifs, or an S-shaped motif that proved common in the collections from my excavations at Tula (see Figure A.109). Similar forms and designs are described in Parsons (1966:171-173).

Figure A.108: Aztec-era Black-on-Orange tripod supports with various styles of vertical lines.


Figure A.109: Examples of the S-shaped tripod support motif that is abundant in Tula.

ORANGE WARE TYPE: PLAIN ORANGE

Plain Orange was the most abundant Aztec type recovered in the early colonial contexts (defined in Chapter 7) at the Open Chapel and Cathedral locations.

FORMS: We included bowls, *molcajetes* (mortars), dishes, miniatures, ladles (which we called spoons in our typology), and in one case a *cazuela* (saucepan). We did not include *ollas* (cooking pots) in this category, nor *comales* (griddles), though these are often in the same ceramic family. The vast majority of rim sherds from our Plain Orange collection were bowls.

PASTE AND FINISHING: The paste and finish of these ceramics is similar to that described for Black-on-Orange ceramics, except that Plain Orange ceramics are undecorated (Parsons 1966:184-185). As well, larger Plain Orange types may be less carefully smoothed and finished than analogous Black-on-Orange forms (Parsons 1966:184-185). Detailed descriptions of Aztec Plain Orange vessels may be found in Parsons 1996: 184-207.

Figure A.110: Plain Orange pumpkin-shaped or gourd-shaped bowl with undulating finish.

Figure A.111: Plain Orange ladle. From Open Chapel site, Operation 2, Context 11

RED WARES

FORMS: Usually hemispherical bowls, small jars or ollitas, copas (pedestaled drinking cups), and recurved-rim bowls (Rodríguez-Alegría 2002:425).

PASTE: Paste is fine-grained and compact, with mineral inclusions ranging from 5-20% (Parsons 1966:2013, Rodríguez-Alegría 2002:424). Paste varies in color from buff to reddish brown. The paste often has a blackened core, as illustrated in Figure A.113 below.

FINISH: Vessel interior and exteriors are covered in a red slip and usually highly burnished. Red Ware types may simply have red slip or may be decorated with black paint, as noted in the subsequent sections.

CHRONOLOGY: We did not use Red Ware types as temporal diagnostics for this dissertation, though readers should note that improvements have been made to our understanding of the chronological development of these wares (see Minc 1994).

RED WARE TYPE: PLAIN RED

Plain Red Red Ware is covered with red slip and highly burnished, as illustrated in Figure A.112 below.

Figure A.112: Examples of Plain Red vessels. Color variation from a deep orangish red to a deep red may be noted amongst the sherds.

RED WARE TYPE: BLACK-ON-RED

Aztec Black-on-Red bowls are typically round-sided, flat-bottomed bowls (Parsons 1966:2011), which is what we found in our sample. Our sample also included less common forms, including *copas* (goblets) and recurved-rim bowls. Common decorative motifs include large solid circles, lines, and scrolls.

Figure A.113: Image showing the thick black core of Aztec Black-on-Red sherds produced by a reducing firing environment environment. This is similar to other Aztec types.

Figure A.114: Black-on-Red rim fragments with a “Giant Dot” decorative motif.

Figure A.115: Black-on-Red fragments with horizontal line motifs.

RED WARE TYPE: BLACK-ON-RED GRAPHITE

The paste, color, and finish of this type is identical to Black-on-Red, but black paint is mixed with a graphite-like mineral that creates a sparkly appearance (see Figure A.115 below). This type is apparently common in the colonial period, and it is called Plombajina by some researchers (Rodríguez-Alegría 2002:431).

Figure A.115: Aztec Black-on-Red Graphite. Note the mineral inclusions in the black paint on this example that create a sparkly appearance.

RED WARE TYPE: BLACK-AND-WHITE-ON-RED

The paste, color, and finish of this type is similar to other Red Ware types, but characterized by black paint and a chalky white paint. Decorative motifs generally consist of black lines of varying thicknesses, with white paint that creates more complex designs above and between these lines (see Figure A.116 and AA.117 below). On many sherds, white paint is extremely faded (see Figure A.117 below).

Figure A.116: Aztec Black-and-White-on-Red ceramic sherds.

Figure A.117: Aztec Black-and-White-on-Red ceramic sherds. The white paint in these examples has faded substantially.

CHALCO AND CHOLULA POLYCHROME

Aztec-style polychromes, called Chalco Polychromes, are generally more properly part of the Red Ware family, since they have a paste and slip that is quite similar to the Red Wares described above. They are decorated in black, white, red, and/or orange paint. Occasionally, as with much of our polychrome sample, painted designs simply consist of orange motifs overlying a burnished red surface. Design motifs for these ceramics are similar to those produced in the Cholula region (Hernández Sánchez 2012:60-61).

Cholula Polychromes are similar to Chalco Polychromes, but rather than a red slip they have a white slip that is covered with a white or orange paint, then painted with complex motifs in black, red, and orange, and subsequently burnished to create a very lustrous surface (Hernández Sánchez 2012:62), as illustrated in the tentatively-identified sherd in Figure A.118 below. For this analysis I did not distinguish between these two types of polychrome, since proper identification would require more expertise, a larger sample, and perhaps INAA analysis to determine the chemical profiles of the clays used to create these vessels. Parsons (1966:263-273) also groups these types together, and provides further description.

Figure A.118: Unidentified polychrome sherd, likely an example of Cholula Polychrome. Complex designs are painted in red, black, orange, and white, and the sherd is highly burnished (see description in Hernández Sánchez 2012:61-62,72).

TEXCOCO MOLDED-TEXCOCO FILLETED WARE

This analysis follows Parsons (1966:254-256) in defining two types of Texcoco wares, Texcoco Molded and Texcoco Molded-Filleted. Parsons (1966:254-256) describes both forms as round-sided bowls with hollow tubular handles. Based on our sample, both types are probably best defined as censers, given that both types have perforations and evidence of burning. Other researchers mention the Texcoco molded type as censers (Charlton et. al. 2007:246, Smith and Berdan 1992:360).

PASTE: Ranges from orange to light brown, but is sometimes a darker reddish-brown (Parsons 1966:254). Temper includes 5-20% black, white, and translucent particles (Parsons 1966:254).

FINISH: Vessels are smoothed, with the natural color of the clay on the surface (Parsons 1966:253). Texoco Molded types have clay dots created by pressing clay into pre-made negative molds (see Figure A.119 below). Texcoco Filleted types have lines of incised clay applications on the vessel surface that were applied by hand (Charlton et. al. 2007:246 and Figure A.120below). Both types have decorative and functional triangular perforations, and vessel bases or other portions of the exterior may be painted in red and burnished (see Figures AA.119 and AA.120).

Figure A.119: Fragments of Texcoco molded fragments, some of which show perforations and evidence of burning, indicating that they are likely censers. On the right is a fragment of a mold used to create the censers, providing strong evidence that Texcoco-style censers were locally produced rather than imported. The mold was found in Operation 4, Context 5 at the Open Chapel.

Figure A.120: Example of Texcoco Filleted type. This sherd is the same one drawn in Figure 6.6 in Chapter 6. Here the red paint on the base is visible, as well as the distinctive applications and the perforation common to censer forms.

AZTEC CENSERS

We found many fragments of hollow tubular handles, often with a cream slip, that belonged to Aztec censers, which likely attached to Texcoco Molded/Texcoco Filleted types (see Brumfiel 2005:141), but because this was not certain we classified these only as "censers." These formed part of the total sherd counts used in Chapter 6.

AZTEC BRAZIERS

We found studded braziers throughout our excavations, and these are common both to the Aztec (see Brumfiel 2005:141) and the Toltec ceramic sequences (see the description of Abra ceramics earlier in this chapter and Cobean 1990). Sometimes, the differences between these two forms were clear, particularly based on vessel wall thickness (Aztec versions appear to be thinner on the whole than Abra varieties) and paste texture (Aztec versions often have medium textured paste, which is apparent in comparison with the rough-textured Toltec variety). Some of the conclusive examples are shown in Figure A.121 below. However, we placed most of our brazier sample outside of temporal diagnostics, leaving them in an unidentified category that did not affect temporal counts. Further research and a larger sample is required to begin to distinguish between these vessel forms at Tula.

Figure A.121: Fragments of Aztec-era studded braziers.

COLONIAL AND HISTORIC FAMILY

MAJOLICA WARES

Majolica wares are distinguished by an earthenware paste that is covered by a vitreous, tin-enameled glaze (Deagan 1987:53). This glazing technology was of European origin, but quickly spread to production centers in Mexico, where kilns were established by 1550 (Deagan 1987:71).

European majolicas were produced in Spain and Italy and then imported to New World sites (Deagan 1987:71). As noted in Chapter 7, we did not find any European majolica imports in our sample from my excavations at the Open Chapel and the Cathedral, though these have been found in at other colonial religious sites in central Mexico (at Mexico City's Metropolitan Cathedral, for example: see Lister and Lister 1982:9). Majolica fragments were extremely rare in general at both sites, and were all of local (Mexican) manufacture. The various types of Mexican majolicas recovered during my excavations are described below.

-MEXICO CITY-TRADITION MAJOLICA

Aucilla Polychrome Majolica (Mexico City tradition)

Aucilla Polychrome is a Mexico City tradition majolica manufactured between about 1650-1700 A.D. (Deagan 1987:28). It is similar to the San Luis Polychrome type described later. This type has a tan or terra-cotta paste and yellow, green, and brown designs. The designs may be relatively shapeless, or comprised of circles and ovals (Deagan 1987:76-77). The sherds of this type that we identified were quite small and thus our identification is tentative; several other types of Mexico-tradition majolica wares have yellow and green paint.

Figure A.122: Aucilla polychrome (Mexico City majolica). This sherd has pale yellow and green paint characteristic of this type. However, this identification is tentative because several early Mexico City majolicas have green paint, including Mexico City Green-on-Cream and San Luis Polychrome. I based this identification based on the sherd's pale green pigment in contrast to the other sherds, as described by Kathleen Deagan for the Lister Collection at the Florida Museum of Natural History (FMNH 2015 specimen 3212).

Mexico City Fine Grade (Mexico City Tradition)

Tan-to-reddish paste, with a glaze that varies from cream to buff, and is applied relatively thickly. Vessel thickness averages around 5 mm (Lister and Lister 1982:14). It may be distinguished from European majolicas by its paste color as well as well as the color and imperfections in its glaze (Deagan 1987:73-74).

Figure A.123: Mexico City fine grade

Mexico City Common Grade, general (Mexico City tradition)

Mexico City common grade ceramics were made alongside fine grade ceramics, with similar paste (see above) except that pastes have a lighter color and thinner glaze (Lister and Lister 1982:24-25).

Figure A.124: Mexico City common grade

Mexico City Blue-on Cream (Mexico City tradition)

This majolica is a variant of Mexico City common grade majolica. It is characterized by dull, washed-out blue motifs in the glaze (Lister and Lister 1982:26).

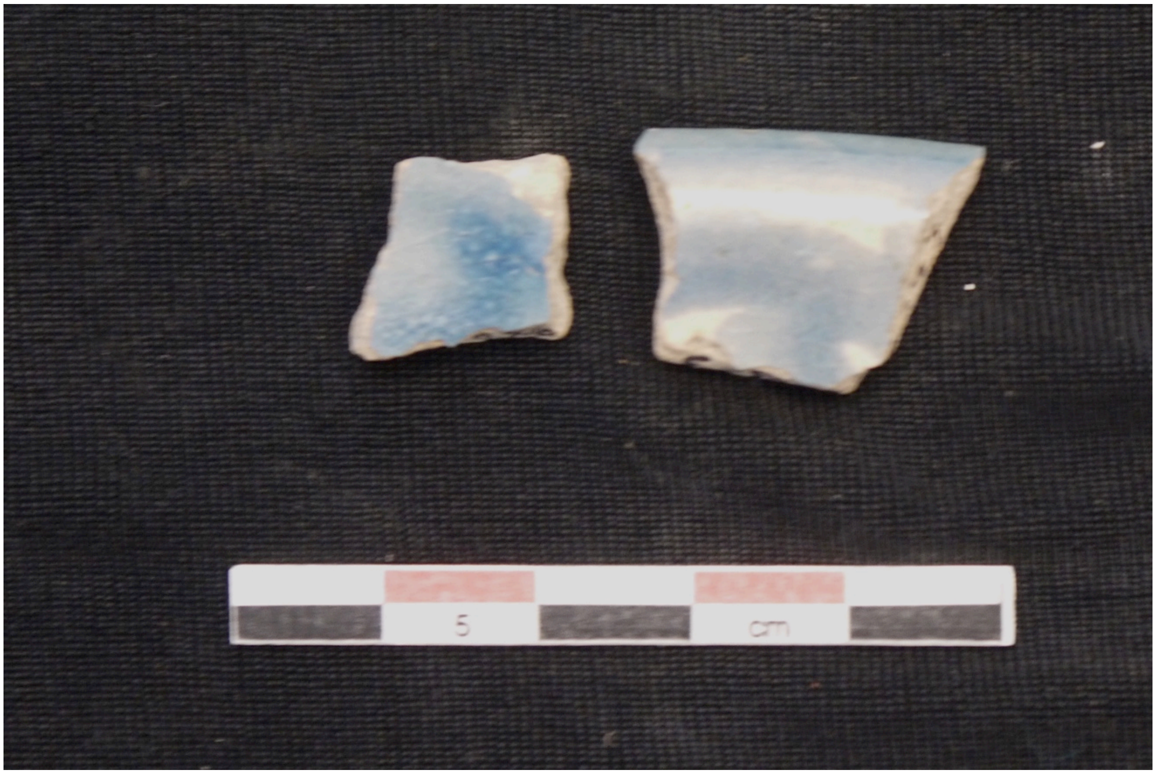

Figure A.125: Mexico City Common-Grade Blue-on-Cream

San Luis Polychrome (Mexico City tradition)

Paste is cream-colored to tan with a thin layer of off-white, cream or tan glaze. Decoration consists of panels outlined in black lines that surround crudely painted motifs of lines and floral designs in green paint (Deagan 1987:76).

Figure A.126: San Luis Polychrome (Mexico City majolica)

19th-Century Mexican Majolica, Rust and Green on White (Mexico City tradition)

This majolica type forms part of a series of Mexico City majolicas produced in the nineteenth century (see Deagan 1987:89, Fig. 4.50a). These ceramics have a tin glaze with designs painted in combinations of green, rust, yellow, orange, yellow, and brown-black (Deagan 1987:89, Seifert 1977:224). Blue is generally not used (Deagan 1987:89). Designs may be floral, in blotches, in bands, or dots (Seifert 1977:224).

Figure A.127: 19th Century Mexico City Tradition Majolica, Rust and Green on White. Vessel walls are 7-8 mm thick. The basis of the identification is clarified in Chapter 7, Table 7.5.

PUEBLA-TRADITION MAJOLICA

Puebla Polychrome (Puebla tradition)

Puebla polychrome is probably the most distinctive Mexico-style majolica. It has cobalt blue elements surrounded by black, lace-like motifs that are thought to be inspired by Talaveran (Spanish) imports (Deagan 1987:81). The paste of this and other Puebla majolicas is white to pale peach in color (Deagan 1987:78).

Figure A.128: Puebla Polychrome (Puebla majolica) From Operation 6, Context 4. Vessel wall is 4.5 mm thick.

Puebla, general (Puebla tradition)

Puebla majolicas, as noted earlier, have creamy white to pale peach paste. The glaze is glossy and white or cream (Deagan 1987:78).

Figure A.129: Unidentified Puebla majolica (general).

Esquilitan Black-Brown and Green-on-Yellow:

A 19th-Century ware produced in Puebla (see FNMH Specimen 1525). Bright yellow glaze covers interior and exterior surfaces. Decoration is in black bands with green designs (Seifert 1977:251). Paste is cream to peach (Seifert 1977:250). This type was likely produced in Puebla (Seifert 1977:251).

Figure A.130: Esquilitan Black-Brown and Green-on-Yellow

Esquilitan Black-Brown-on-Yellow

This is a 19th-Century type likely produced in Puebla (Seifert 1977:249-250). Surfaces are glazed with various shades of bright yellow, and decorated with black-brown bands. Paste is cream, peach, or terra cotta (Seifert 1977:249-250).

Figure A.131: Esquilitan Black-on-Yellow

GUANAJUATO-TRADITION MAJOLICA

Paste is pink to terracotta, with thickly-applied white glaze and designs in black, green, yellow, and brown (Cohen-Williams 1992:126). These form part of the general nineteenth-century (Republican) ceramics that became popular after the colonial period. For images, see the Florida Museum of Natural History type collections[40] (FMNH 2015 Specimen 1648).

COLONIAL OLIVE JARS

40 https://www.flmnh.ufl.edu/histarch/gallery_types/type_index_display.asp?type_name=GUANAJUATO%20POLYCHROME

Olive jars are coarse earthenware vessels with a soft paste and high porosity used for storage and shipping containers. They often have a green or yellow grainy glaze, on interior surfaces, as illustrated in Figure X.X below. They also have undulating walls. These were manufactured in Europe and imported to the New World between 1490-1900 A.D. (Deagan 1987:31-35). We found two examples, both in Operation 6, Context 35 at the Cathedral site.

Figure A.132: Example of a colonial-era olive jar (temporality unknown).

PORCELAIN

Porcelains are vitrified ceramics made with kaolin clay and fired at extremely high temperatures (Rice 1987:6). They are extremely hard and transluscent, and create a ringing sound when tapped or dropped (Rice 1987:6). Fine imported Asian porcelains have been found previously in Tula, but were not present in my excavations (see Chapter 7).

As noted in Chapter 7, most of our porcelain samples were either clearly modern or unidentified, but were almost certainly not examples of imported porcelains, with a single possible example of bone china. Bone China was produced in England between 1830-1900. It has a vitreous, nearly transluscent paste and a white or ivory, reflective glaze that is well-bonded to the paste (see FNMH Specimen 87).

COLONIAL-PERIOD GLAZED WARES

As noted in Chapter 7, colonial-era lead-glazed wares are the only type of European-tradition ceramics found in early colonial comparative contexts at the Open Chapel and

Cathedral sites. However, though lead glaze was a European introduction, these glazes were added to vessels that were often (though not exclusively) produced Indigenous-tradition ceramic workshops in the early colonial period (Hernández Sánchez 2012:108), and thus cannot be said to be properly "European tradition." Rather, potters in Indigenous workshops creatively innovated by using this finishing technique on existing Indigenous-tradition wares. Some vessels were thrown on wheels, while others were mold-made (Hernández Sánchez 2012:111-112). These vessels are extremely difficult to phase at present, since they began to be produced almost immediately in the colonial period and they continue to be popular (especially as cooking vessels) in modern homes and markets. For reference also see Francisco Beristain (1988).

We identified several decorative varieties of this type. As may be observed from the photographs below, decorative colors form a continuum rather than distinct categories. These included green glaze, amber glaze, black-on-amber, green-stamped, amber-stamped, yellow on amber, and yellow-and-black-on-amber. The rim sherds from our sample generally belonged to dishes and bowls, though a few *olla* and *molcajete* vessels were also present. Some examples of the major types, green-glazed and amber-glazed, are illustrated in Figures AA.133 and AA.134.

Figure A.133: Green Glazed or Vidriado Verde

Figure A.134: Amber-Glazed or Vidriado Ambar

APPENDIX B: PALEOPATHOLOGICAL ANALYSIS

BY VALERIE DAVIS

Valerie Davis produced the following report as part of her work for Shannon Dugan Iverson's 2013 archaeological research project. Additional information on the same burial population may be found in Vázquez Cibrián 2013 and Mendoza 2010.

METHODS

ANALYSIS OF HUMAN REMAINS

Prior to the current analysis, the skeletal remains were excavated in 2010, and placed in acid-free cardboard boxes labeled by burial feature. This analysis provides information by burial (box). Each set (box) of skeletal remains was examined and inventoried following a standardized battery of measurements and morphological observations (see Matternes et al. 2010). This style of analysis is capable of addressing both complete and fragmentary remains as well as commingled assemblages. Measurements were taken using a Mitutoyo Digimatic sliding caliper, a Paleotech spreading caliper, a fiberglass tape measure, and an osteometric measuring board. These tools and accompanying procedures followed the procedures outlined in Bass (1987) and Moore-Jansen et al. (1994). Metric observations were compiled by skeletal element, observation type, and general anatomical location. Morphological observations followed standardized assessments provided in Buikstra and Ubelaker (1994).

INVENTORY

An examination of each set of human remains began with an inventory of the recovered bone and bone fragments. The inventory included a full list of recovered elements and provided a base to determine the minimum number of individuals present in each burial group. The inventory was organized by general anatomical position within the body and then by skeletal element, and included the condition of each bone including preservation and completeness. Skeletal condition predicted what types and details of information available for each individual.

Each skeletal element was scored according to its general state of preservation. Bones given a score of "1" were considered complete (>75 percent represented) and provided near-complete to complete sets of measurements and observations. A score of "2" was given to fragmentary remains (50-75 percent present), which indicated that some measurements and observations were not available. Elements that were less than 50 percent complete were provided a score of "3". Extremely fragmentary remains were recorded as present or absent as no measurements could be obtained.

Each skeletal element was also scored as to their relative development to address age at death. The dentition, both deciduous and permanent, was inventoried as to the development and completeness of each tooth. More information on dental analysis is provided below.

MINIMUM AND MAXIMUM NUMBER OF INDIVIDUALS

Because the skeletons were buried in close association and excavation was difficult, most boxes of remains contained more than one individual. For the purposes of this analysis, both a minimum and maximum number of individuals was calculated for the recovered skeletal population. The minimum number of individuals (MNI) is the smallest number of individuals necessary to account for all of the bones recovered from the excavation. Following techniques outlined in Ubelaker (1974) the MNI was determined for the population as a whole. In general, skeletal elements were examined for duplication and for major differences in development and morphological differences related to age and sex, as well as overall health. The maximum number of individuals (MxNI) was calculated by sorting each box of remains to identify the primary interment and then to estimate the number of secondary individuals (ancillary skeletal element inclusions). The goal of providing and MNI and MxNI is to provide a general population estimate.

AGE AND SEX DETERMINATIONS

Age and sex determinations were made for the primary individual in each burial as well as estimates for the secondary inclusions. Sex was determined from a suite of sexually dimorphic skeletal characteristics for adults and older adolescents using composite estimates, based on pelvic, sacral, cranial, and limb morphology. Cranial morphology focused primarily on nuchal, temporal, frontal and mandibular aspects as sources of reliable sexually dimorphic patterns noted in Bass (1987) and Krogman and Işcan (1986) and were recorded using the format outlined in Buikstra and Ubelaker (1994). Pelvic morphology was assessed following the standards outlined by Anderson (1962), Bass (1987), Işcan and Derrick (1984), and Phenice (1969). Sacral curvature was assessed using illustrations provided in Anderson (1962:142).

The age at death was determined for subadults (preterm fetuses, infants, children, and adolescents) using dental and skeletal development. Crown and root development for deciduous and permanent dentition was recorded and compared with results reported by Moorees et al. (1963a, 1963b), Thoma and Goldman (1960), and Smith (1991). The appearance and fusion of epiphyseal and diaphyseal elements were used to estimate the degree of maturation following Scheuer and Black (2004). Development of the occipital bone (Suchey n.d.) and tympanic plate stages (Weaver 1979) were used to assess cranial maturity. Measurements of the limb diaphyses were compared to results obtained by Fazekas and Kosa (1978), Scheuer and Black (2004), and Baker et al. (2005) to determine age based on skeletal size.

Age estimation for adults was typically assessed using cranial suture closure and degenerative changes to the pelvis. As the auricular surface was one of the more commonly preserved skeletal regions, the age-related changes in morphology outlined by Lovejoy et al. (1985) were extensively used. Rates of cranial suture closure were occasionally used if the skull was intact enough for observation. Various aspects of suture closure were obtained from Meindl and Lovejoy's (1985) ectocranial ossification data and closure of the maxillary palatine sutures were recorded and evaluated following Mann et al. (1991).

STATURE

Stature, the standing height of an adult individual, reflects the collective effects of nutrition, disease exposure, work, and the physical environment on the individual (Steckel 1979; Tanner 1962). It also reflects sexual dimorphism, ancestry, and natural history.

Measurements were obtained using an osteometric board using methods provided in Bass (1987). Since stature varies from population to population, formulas were chosen that best approximated the study sample (Ubelaker 1978). Stature estimates were calculated from adult male and female Mesoamerican formulas generated by Genovés (1967). These formulas provided stature estimates that were expressed in height ranges. Stature calculations require that the sex of the individual be known, that the individual is fully mature, and that the long bone is well preserved. These requirements were met by only three individuals in the Tula skeletal assemblage, all of which were included in the secondary deposit of Burial 22.

DENTAL ANALYSIS

Oral health was scored using a battery that included visual observations and measurements. Dental inventories and health assessments were adapted from Hillson (2001) following a data collection regimen established by de la Rosa (2007). Teeth were recorded as to their presence or absence. If a tooth was missing, the cause behind it was suggested including loss from decay or injury. Alveolar resorption and location and severity of calculus deposits were recorded. Mesio-distal and bucco-lingual measurements used definitions provided in

Buikstra and Ubelaker (1994). Dental attrition (Smith 1984) and calculus accumulation (Brothwell 1981) were recorded and the severity was scored. Macroscopic examination of enamel hypoplasias and periodontal disease was also carried out. Each enamel hypoplastic band was measured with calipers from the cemento-enamel junction (CEJ) to the area affected. Finally, hypercementosis or other pathological conditions were noted as they occurred by tooth.

OVERALL HEALTH OBSERVATIONS

Health condition for each individual was based on macroscopic examination following Jurmain (1991). A battery of 11 macroscopic observations, including bowing, cartilage and other connective tissue ossification, cortical thinning, cortical and medullary volume increases, degeneration, density increase and loss, injury, and osteolysis, recorded the responses to stress by the affected skeletal element and the specific location on each bone. The general severity, degree of localization, and a brief description of each observed feature were also included.

RESULTS

During the 2010 excavations, 44 burials were identified in the 3x6-meter unit. Cobean et al. (2011) notes that six burials were left *in situ* because the remains extended beyond the limits of the excavation. Five were left unexcavated due to extremely poor preservation. The remaining 33 burials were fully excavated and removed to the laboratory facility. By 2012, 31 individual sets of remains, and a general bone bag, were available for study. Two sets of remains were lost between 2010 and 2012.

In general, preservation of the remains was poor. Observations of the remains noted the presence of substantial erosion of trabecular bone and pitted and broken cortical surfaces. Poor preservation precluded complete analysis of each individual. Cranial elements such as the frontals, mandibles, and temporals, and post-cranial elements including the humerii, femora, and tibiae, are largely composed of dense cortical bone, and were often the best and most frequently recovered elements. Measurements and observations from these remains were among the most complete for the population. In contrast, the more delicate and highly trabecularized remains of the torso including the ribs and vertebral bodies, as well as the pubis, and bones of the face, feet, and hands were underrepresented. Unfortunately, some of the best indicators of age, sex, health, and ancestry rely on observations of these elements. The incomplete nature of the remains reduced the quality of information obtained by forcing the analysis to rely on fewer skeletal estimators.

The following is a detailed discussion of each feature including an inventory, age, sex, ancestral affiliation, and pathologies observed. The results of each case's examination are presented below.

BURIAL DESCRIPTIONS

Burial 3

Burial 3 contained the remains of at least seven individuals including the primary 30-34 year old female, a second adult, three subadults, an infant, and a fetus (Table 1). Elements attributed to the primary individual included the cranium, arms, scapulae, clavicles, vertebrae fragments, pelvis, and legs. The remains were poorly preserved and fragmentary. Sex determinations for the primary individual were based on morphological characteristics of the cranium as well as overall robusticity. The gonial angle of the mandible was greater than 125° suggesting the individual may be female (Krogman and Işcan 1986). In general, the long bones were gracile. Finally, measurements of the humeral head, while not as reliable as other metric methods, fell well within the range for females (Stewart 1979).

Age at death was estimated using degenerative changes on the right auricular surface. The auricular surface exhibited a general loss of billowing with replacement by striae and a distinct coarsening of granularity. This stage of degeneration typically occurs between 30-34 years of age.

The individual's oral cavity was relatively healthy. At the time of death, all dentition was present and fully erupted. Very slight alveolar resorption was observed on the maxilla suggesting the presence of periodontal disease. Attrition was light, with most teeth exhibiting only slight blunting of the cusps. Mild to moderate calculus was observed on all but the right third molars. No carious lesions were noted. No other indications of developmental or pathological conditions were observed on the remainder of the fragmentary remains. Shovel-shaped incisors suggest that the individual was a descendent of the local indigenous population.

Based on an analysis of the remaining 27 skeletal elements, the partial remains of at least additional five individuals were recovered with Burial 3 including one adult, two subadults, one infant, and one fetus. The following table presents the elements assigned to each individual and their estimated ages. No pathological conditions were observed on the fragmentary remains.

Individual	Element	Estimated Age
Female	Primary Interment	30-34 years
Unsexed Adult	Left Maxillary Second Molar	Adult
Subadult	Right Maxillary First Premolar	8 years +/- 2 years
Subadult	Dentition	Likely 3.5-6.5 years. (5 years +/- 1.5 years based on dentition. 3-4 years based on left innominate measurements)
	Left Mandibular Canine	
	Left Innominate	
	Left Pubis	
	Left Ulna – Distal Half	
	Metacarpals, N=2	
	Phalanges (Hand), N=10	
Infant	Right Ulna (Proximal Shaft)	Infant
	Rib Fragments, N=2	
	Right Scapula Fragment	
	Right Clavicle Fragment	
	Thoracic Centrum	
Fetus	Neural Arch Fragment	2-4 months in utero

Table 1. Additional Skeletal Elements Recovered with Burial 3

Burial 4

Burial 4 includes the remains of two individuals (Table 2). The primary individual is a subadult approximately 10 years of age. Elements attributed to the primary individual included the cranium, arms, clavicles, scapula, sternum, vertebrae fragments, and legs. The remains were poorly preserved and fragmentary. Age was based on dental development and eruption rates. The majority of the dentition was present and included five deciduous teeth that were still in occlusion at the time of death. The apices of the maxillary incisors were 50 percent closed while the crowns of the mandibular second molars were 75 percent complete. This stage of development corresponds to an age range of 10 years +/- 1.5 years.

The child's oral cavity showed the presence of pathogens and early stages of decay. One carious lesion was identified on the lingual enamel surface of the deciduous maxillary right second molar. An additional eight carious lesions were identified on the permanent dentition, most of which were found on the crown surfaces of the left maxillary dentition. None of the caries were severe enough to reach the dentin. Attrition on the deciduous dentition was consistent with the age of the individual. Four of the five remaining deciduous teeth exhibited small areas of exposed dentin. The permanent dentition exhibited very minor wear. Seventeen enamel hypoplastic bands were observed on the child's permanent dentition. Three distinct bands were observed on both the mandibular right lateral incisor and on the left canine indicating that the child suffered at least three periods of developmental stress during childhood.

The post-cranial remains also exhibited pathological conditions associated with developmental and nutritional deficiencies. The right femur exhibited moderate lateral bowing of the distal end (Figure B.1). However, as the femur was incomplete, it was impossible to provide a specific etiology. It is likely that both the bowing and the enamel hypoplasias were skeletal responses to metabolic disturbances.

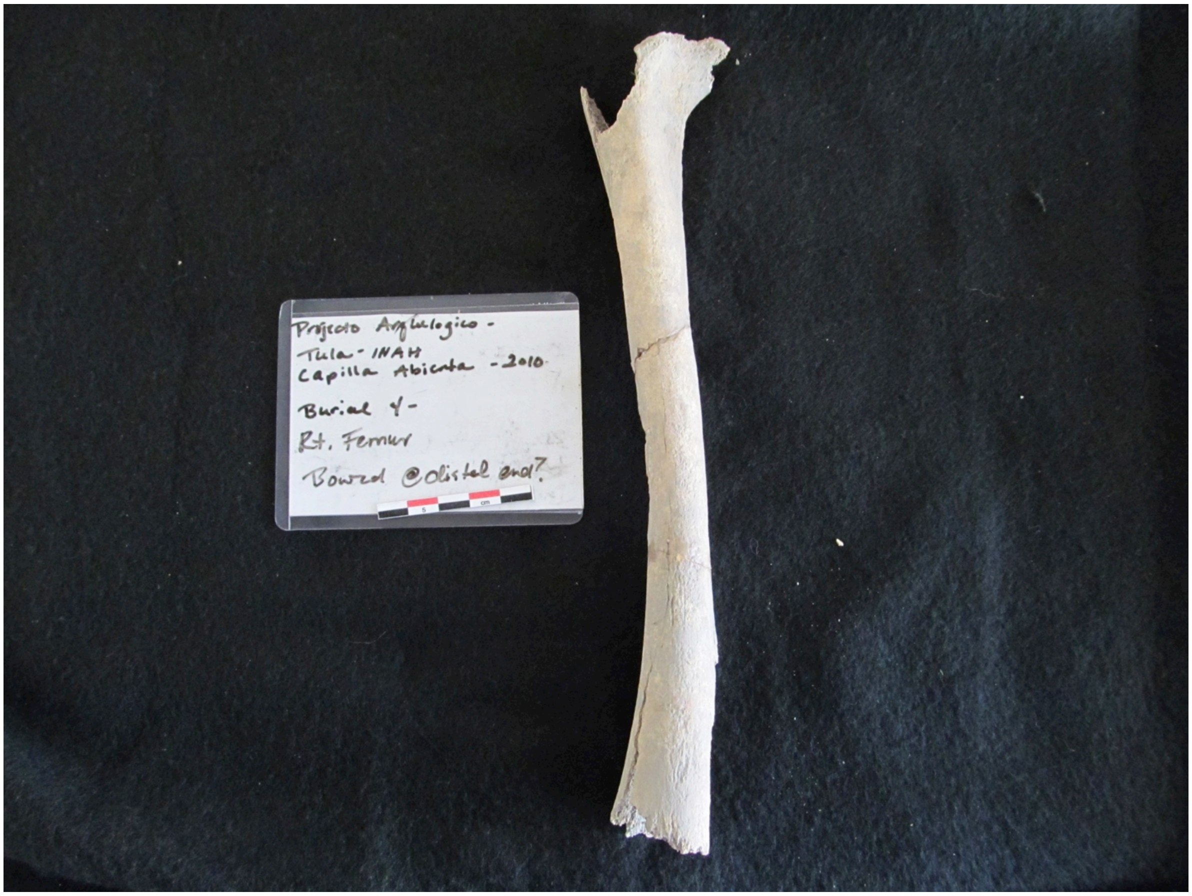

Figure B.1 Right femur showing moderate lateral bowing of the distal end.

In addition to the primary individual, one additional skeletal element was recovered, which belonged to an adult. No pathological conditions were observed on the additional remains.

Individual	Element	Estimated Age
Subadult	Primary Interment	10 +/- 1.5 years
Unsexed Adult	Phalanx (Hand)	Adult

Table 2. Additional Skeletal Elements Recovered with Burial 4

Burial 5

Burial 5 contains the remains of at least three individuals including the primary 3- to 5-year-old child and fragments of a neonate and an adult (Table 3). Elements attributed to the primary individual included the cranium, left humerus, clavicles, a first rib, and vertebrae fragments. The remains were poorly preserved and fragmentary. Age at death for the primary individual was based on dental development and eruption rates. At the time of death the crowns of the permanent mandibular second molars were beginning to form indicating that the child was approximately 4 years +/- 1 year. Shovel-shaped incisors suggest that the individual was a descendent of the local indigenous population.

The child's oral health was excellent with only minor attrition on the deciduous dentition. No calculus or enamel hypoplasias were observed, and no other indications of pathological or developmental conditions were noted on the skeletal remains.

In addition to the primary individual, three additional skeletal elements were recovered, which belonged to an adult and a neonate. No pathological conditions were observed on the additional remains.

Individual	Element	Estimated Age
Subadult	Primary Interment	4 years
Unsexed Adult	Left Patella	Adult
Neonate	Right Humerus Diaphysis Fragment	Neonate
	Right Ulna Shaft	

Table 3. Additional Skeletal Elements Recovered with Burial 5

Burial 6

Burial 6 contained two individuals including the primary adult male and fragments of a second adult (Table 4). Elements attributed to the primary individual included the cranium, arms, scapulae, clavicles, vertebrae fragments, left ilium, and legs. The remains were poorly preserved and fragmentary. Sex of the primary individual was based on cranial morphology and overall robusticity. The orbital margins were rounded, the brow ridges were pronounced, the chin was prominent, and the mastoid processes were very large. These traits are consistent with male morphology. Age at death was based on overall size and maturity of the remains. The auricular surfaces were too decomposed to use for age estimation. However, all of the observable epiphyses were fully fused indicating the individual was an adult.

The individual's oral cavity showed evidence of oral pathogens. Every tooth was present and in occlusion at the time of death. However, slight to moderate calculus deposits were found on all 24 teeth. The anterior dentition exhibited higher levels of calculus deposits than the molars. No carious lesions were observed. Dental attrition was slight to moderate, with only the maxillary right second molar exhibiting dentin exposure. Very slight periodontal disease was observed on the mandible. A total of five hypoplastic bands were observed on the mandibular dentition. Three distinct bands on the right mandibular lateral incisor indicated that the individual survived at least three episodes of developmental or metabolic stress as a very young child. Shovel-shaped incisors suggested that the individual was a descendent of the local indigenous population. No other pathological conditions were observed on the skeletal remains.

Individual	Element	Estimated Age
Adult Male	Primary Interment	Adult
Unsexed Adult	Mandible Fragments	Adult
	Right Mandibular First Premolar	

Table 4. Additional Skeletal Elements Recovered with Burial 6

Slight wear was observed on the occlusal surface of the right mandibular first premolar of the second individual. No other pathological conditions were observed on the fragmentary remains.

Burial 7

The remains of at least seven people were recovered with Burial 7 including the primary adult male (Table 5). Elements attributed to the primary individual included the cranium, arms, scapulae, right clavicle, sternum, vertebrae fragments, and legs. Preservation of the fragmentary remains was poor. Sex of the primary individual was based on cranial morphology and overall robusticity. The cranium exhibited rounded orbital margins, very distinct brow ridges, a strong nuchal line, and large mastoid processes. These characteristics are consistent with male morphology. Age at death was based on cranial suture closure. All ectocranial sutures that could be observed were open at the time of death suggesting that the individual was 30-40 years of age.

The individual's oral cavity showed advanced occlusal wear and evidence of oral pathogens. At the time of death most of the individual's dentition showed excessive wear to the point of full crown loss on the maxillary first and second molars. Small deposits of calculus were observed on most teeth with the left mandibular canine exhibiting a moderate deposit. Moderate periodontal disease was observed on the maxilla and mandible. Excessive dental wear could have prevented the larger calculus deposits or carious lesions from forming. Shovel-shaped incisors suggest that the individual was a descendent of the local indigenous population.

Slight lipping of the cervical vertebrae and moderate lipping of the thoracic indicated that the individual developed osteoarthritis. The superior articulations of the thoracic vertebrae exhibited the most acute degeneration (Figure B.2). Osteoarthritis is the result of the breakdown of cartilage and is commonly associated with advancing age and hard labor (Johnson 1959, Jurmain 1977, Kellgren and Lawrence 1958, Lawrence 1961, Naira 1932).

Figure B.2: The superior articulations of the thoracic vertebra, showing acute degeneration

Individual	Element	Estimated Age
Adult Male	Primary Interment	30-40 years
Unsexed Adult	Right Hamate	Adult 1
	Right Humerus shaft	
	Right Radius Head	
	Right Ulna Shaft	
	Triquetral	
Unsexed Adult	Right Fibula (Distal Diaphysis and Partial Epiphysis)	Adult 2
	Right 1st Metatarsal	
	Right 2nd Metatarsal	
	Right 3rd Metatarsal	
	Right 5th Metatarsal	
	Left 5th Metatarsal	
	Phalanges (Foot), N=12	
	Pollux Fragment	
Subadult	Unsided 3rd Metatarsal	3-5 years, estimated
Subadult	Humerus Head (Epiphysis)	1-2 years, estimated
Subadult	Left Ulna Shaft	1 year +/- 4 months
	Right Ulna Shaft	
	Right Femur Shaft	
	Right Tibia Shaft	
	Rib Fragment	
	Deciduous Left Maxillary Central Incisor	
Fetus	Right Ulna Shaft	26-28 weeks in Utero

Table 5. Additional Skeletal Elements Recovered with Burial 7

Based on the analysis of the remaining 33 skeletal elements, the partial remains of at least six additional individuals were recovered with Burial 7 including two adults, three subadults, and one fetus. The following table presents the elements assigned to each individual and their estimate ages. No pathological conditions were observed on the fragmentary remains.

Burial 8

Burial 8 contains the remains of at least six people including the primary 13-16 year old subadult (Table 6). The primary individual was relatively well preserved as compared the rest of the assemblage. Elements attributed to the primary individual included the cranium, arms, rib fragments, scapulae, clavicles, sternum, hyoid, vertebral column, pelvis, and legs. Age at death for the primary subadult was based on fusion rates of the distal radius and proximal humeral epiphyses, as well as the femur head. Partial fusion for the radius and humerus suggested that the individual was between 13-17 years old. Complete fusion of the femur head occurs between 12-16 years of age (Scheuer and Black 2000). Taken together, epiphyseal fusion indicated the subadult was approximately 13-16 years of age at death.

Though the child had not reached full maturity, cranial, pelvic, and sacral morphology suggested that the individual may have been female. The orbital margins were sharp, the brow ridge was undefined, and the mastoid processes were small and projected inward. The gonial angle of the mandible was greater than 125° and the chin was slight. Sacral curvature was also slight. The iliac contour was flared, the auricular surface was small and raised, and the preauricular sulcus was wide. These characteristics are common to the female phenotype.

The young woman's oral cavity showed early signs of decay. Slight periodontal disease was observed on both the maxilla and mandible. Small calculus deposits were observed exclusively on the right mandibular dentition. Seven carious lesions were present, with the majority occurring on the right maxillary anterior dentition. None of the lesions had penetrated down to the dentin. Attrition was mild with no dentin exposure. Fourteen enamel hypoplastic bands were identified primarily on the incisors and canines. Six teeth, including the maxillary central incisors and all four mandibular incisors, showed two distinct bands indicating the child survived at least two episodes of developmental stress as an infant. Shovel-shaped incisors suggest that the individual was a descendent of the local indigenous population. No other pathological conditions were observed on the primary skeletal remains.

Based on the analysis of the remaining skeletal elements, the partial remains of at least five additional individuals were recovered with Burial 8 including one adult, one subadult, one infant, one neonate, and one fetus. The following table and discussion presents the elements assigned to each individual, their estimate ages, and pathological conditions observed.

Individual	Element	Estimated Age
Subadult	Primary Interment	13-16 years
Unsexed Adult	Left Patella	Adult
	Right 5th Metatarsal	
	Left 5th Metatarsal	
	Right Lunate	
	Left Pollux	
	Phalanges, N=3	
	Maxilla Fragments and Dentition	
	Mandible Fragments and Dentition	
Subadult	Dentition	4 +/- 1 year
Subadult	Dentition	18 months +/- 6 months
Infant	Right Humerus	0-6 months
	Right Ulna	
	Phalanges, N=4	
	Rib Fragments, N=16	
	Left Scapula	
	Left Clavicle	
	Cervical Vertebrae, N=1	
	Indeterminate Vertebrae, N=1	
	Left Femur	
	Right Femur	
	Left Tibia	
	Right Tibia	
Fetus	Right Ilium	Fetus

Table 6. Additional Skeletal Elements Recovered with Burial 8

Dentition belonging to the secondary adult exhibited mild to severe attrition suggesting the individual was well into adulthood at the time of death. Calculus deposits were mild to severe and were limited to the mandibular dentition. Two carious lesions were observed on the right mandibular first molar, neither of which reached the dentin. Four enamel hypoplastic bands were observed on the maxillary right lateral incisor and canine and the mandibular canines. Each tooth exhibited a single band, suggesting that the individual survived at least one episode of developmental stress as an infant.

Burial 9

Burial 9 contained the remains of six individuals including the primary adult male (Table 7). Elements attributed to the primary individual included the cranium, arms, ribs, scapulae, clavicles, sternum, vertebrae fragments, pelvis, and legs. Preservation of the remains was good to moderate. Sex of the primary adult was based on morphological characteristics of the cranium and pelvis. The skull exhibited rounded orbital margins, a squared gonial angle, and large projecting mastoid processes. The sciatic notch was very narrow and the subpubic area was straight. These characteristics are commonly associated with the male phenotype.

Age at death was based on the surviving portions of the auricular surface and cranial suture closure. Degenerative changes to the apex suggested the individual was approximately 35-49 years of age. Partial fusion of the anterior sagittal suture indicated that the individual was approximately 45 years of age. Taken together, these estimates suggested the individual was approximately 35-45 years of age at the time of his death.

The individual's oral cavity exhibited signs of advanced decay. Six teeth including the maxillary first premolars, left second premolar, right second and third molars, and the mandibular left first molar were lost prior to death and the alveolar margin was partially to fully remodeled. Attrition on the remaining dentition was significant, with six teeth exhibiting a complete loss of the crown. One carious lesion, on the medial root surface of the right mandibular second molar, had yet to reach the dentin.

Some time prior to death, the individual suffered a significant fracture of the right clavicle (Figure B.3a). The lateral end of the clavicle exhibited pseudoarthrosis, a false joint that can occur when the fracture results in a non-union of the bone. Clavicle fractures are common and are most often caused by a fall onto the shoulder or onto an outstretched hand (Lovell 1997). Typically, with immobilization of the arm, the fracture heals quickly without medical intervention. However, as is the case with this individual, repeated use of the fractured shoulder resulted in the healing, but non-union of the bone. The individual also suffered significant fractures of the lower spine (Figure B.3b). Compression fractures were observed on the twelfth thoracic and the first and second lumbar vertebrae. Osteoarthritic lipping was observed on the third and fourth lumbar vertebrae, which may have been associated with the injury to the vertebrae directly above them.

Figure B.3a: Significant fracture of the right clavicle, Individual 9.

Figure B.3b: significant fractures of the lower spine, Individual 9.

Compression fractures can be caused by a number of factors including high-velocity accidents (American Academy of Orthopaedic Surgeons 2010). It is possible that this individual sustained the injury during a fall from a great height. Fractures of this nature take several weeks to heal (American Academy of Orthopaedic Surgeons 2010). It is possible that the injuries to the clavicle and spine were sustained during the same accident, which may have resulted from a fall. Complications from spinal fractures include pulmonary embolism, pneumonia, and pressure sores from immobility. Though the individual survived the fall for at least several months as evidenced by healing of each injury, it is possible that he succumbed to secondary complications.

Based on the analysis of remaining skeletal elements, the partial remains of approximately four additional individuals were recovered with Burial 8 including an adult female, one unsexed adult, one subadult, and one neonate. The following discussion presents the elements assigned to each individual and their estimated ages. The two loose permanent teeth exhibited different levels of attrition and calculus growth and were likely not from the same individual. However, it is possible that one of the teeth belonged to the adult female. Based on the advanced level of oral decay in the primary adult male, it is unlikely that either tooth belongs with that individual.

Individual	Element	Estimated Age
Adult Male	Primary Interment	35-45 years
Adult Female	Right Fibula (Proximal end)	Adult
	Left Ulna (Proximal end)	
	Right 5th Metacarpal	
	Right Femur (Distal end)	
Unassigned Adult Elements	Permanent Maxillary Right Canine	Adult
	Permanent Maxillary Right Lateral Incisor	
Subadult	Deciduous Maxillary Left Central Incisor	1 year +/- 4 months
Neonate	Cervical Neural Arch	Neonate

Table 7. Additional Skeletal Elements Recovered with Burial 9

Burial 10

Burial 10 contains the remains of a neonate. Elements attributed to the primary individual included the cranium, right humerus and hand fragments, right scapula and clavicle, one vertebrae fragment, the left ilium, and right femur and foot fragments. Overall preservation of the fragmentary remains was good to average. Age at death was determined using presence and development of deciduous dentition and overall size of the individual. Based on the development of the left mandibular second molar the child was approximately 0-6 months at the time of death. The length and development of the right humerus is consistent with children between 40 weeks (in utero) to 2 months post-partum (Scheuer and Black 2000). Taken together these estimates place the neonate's age at 0-2 months. No pathological conditions were observed on the fragmentary remains.

Burial 12

The remains of a 3- to 6-year-old child were recovered from Burial 12. Elements attributed to the primary individual included the cranium, arms, left scapula, left clavicle, and vertebrae fragments. Preservation of the fragmentary remains was poor. Age at death was based on overall development of the skeleton and dental development and eruption rates. The crowns of the permanent incisors, canines, and first molars were partially to fully complete indicating that the child was approximately 4 years +/- 1 year at the time of death. The diaphyseal length of the right radius, however, suggested that the child was approximately 1.5-2 years of age. It is likely that the dental development is correct and that the child was small for its age. Beyond slight wear on the deciduous dentition, no pathological conditions were observed on the fragmentary remains.

Burial 13

Burial 13 contained the remains of at least three individuals including the primary subadult (Table 8). Elements attributed to the primary individual included the cranium, left humerus and hand, right arm, left clavicle, sternum, and vertebrae fragments. Preservation of the fragmentary remains was poor. Age at death for the primary individual was based on dental development. Crown development of the permanent incisors, canine, and first molars suggest that the child was approximately 3 years +/- 1 year at the time of death. The post-cranial skeleton appeared small and underdeveloped for the estimated age of the child. It is possible that the child suffered from a metabolic or genetic condition that hindered growth. Beyond slight wear to the deciduous dentition, no pathological conditions were observed on the fragmentary remains.

Based on the analysis of the remaining skeletal elements, the partial remains of at least two additional individuals were recovered with Burial 13 including an unsexed adult and a subadult. The following discussion presents the elements assigned to each individual and their estimate ages.

Individual	Element	Estimated Age
Subadult	Primary Interment	3 +/- 1 year
Unsexed Adult	Right 3rd Cuneiform	Adult
	Phalanx (Foot)	
Subadult	Permanent Left Maxillary Central Incisor	7 +/- 2 years
	Deciduous Right Mandibular First Molar	

Table 8. Additional Skeletal Elements Recovered with Burial 13

Burial 14

The fragmentary remains of two individuals were recovered with Burial 14 including the primary subadult and a secondary adult (Table 9). Elements attributed to the primary individual included the cranium and deciduous dentition. Preservation of the fragmentary remains was poor. Age at death for the primary individual was based on overall size of the cranium and dental development and eruption rates. The apex of the deciduous right maxillary lateral incisor was 50 percent complete suggesting the child was 2-4 years of age at death. Overall size of the cranium is consistent with this age group. Beyond minor attrition on the lateral incisor, no pathological conditions were observed on the remains.

Individual	Element	Estimated Age
Subadult	Primary Interment	2-4 years
Unsexed Adult	Acromion Process (Scapula)	Adult

Table 9. Additional Skeletal Elements Recovered with Burial 14

Burial 15

Burial 15 contains the remains of three individuals including the primary adult female (Table 10). Elements attributed to the primary individual included the cranium, arms, rib fragments, scapulae, clavicles, sternum, vertebral column, pelvis, and legs. Overall preservation of the remains was good to moderate. Sex of the primary individual was based on morphological characteristics of the cranium and pelvis. The skull exhibited sharp orbital margins, a slight brow ridge, a tall frontal contour, and small mastoid processes. The left innominate exhibited a wide preauricular sulcus and a small raised auricular surface. These characteristics are consistent with the female phenotype.

Age at death was based on cranial suture closure. All of the observable ectocranial sutures exhibited less than 50 percent closure indicating that the individual was approximately 35-45 years of age.

The individual's oral cavity exhibited evidence for oral pathogens. The alveolar margin of the maxilla was partially resorbed indicating the presence of periodontal disease, which left the dentition susceptible to oral pathogens. Calculus deposits were small and limited to five teeth including to the left premolars, right second molar and both third molars. Attrition was moderate with most teeth exhibiting small areas of dentin exposure. Shovel-shaped incisors suggested that the individual was a descendent of the local indigenous population.

A distinct comminuted crushing injury and possible subluxation was observed on the phalanges of the right fifth toe (Figure B.4). Pitting, lipping, and ligament ossification were noted. It is possible that the individual sustained the injury during a forceful kick. The injury resulted in the permanent fusion of the distal and medial phalanges and the possible pseudoarthrosis of the distal end of the proximal phalanx.

Figure B.4: A distinct comminuted crushing injury and possible subluxation observed on the phalanges of the right fifth toe, Burial 15.

In addition to the broken toe, several small arachnoid granulations were observed on the endocranial surface. These endocranial depressions are thought to be associated with intracranial pressure, and are not related to cause of death (Mann et al. 2004).

Individual	Element	Estimated Age
Adult Female	Primary Interment	35-45 years
Unsexed Adult	Right Capitate	Adult
Subadult	Neural Arch Half (N=2)	Neonate/Infant
	Ischium	
	Metatarsal	
	Phalanges (N=2)	

Table 10. Additional Skeletal Elements Recovered with Burial 15

Burial 17

The remains of at least three individuals were recovered with Burial 17 including the primary adult female (Table 11). Elements attributed to the primary individual included the cranium, arms, rib fragments, scapulae, clavicles, portions of the vertebral column, the pelvis, and portions of the legs. Overall preservation was poor to average. Determination of sex for the primary individual was based on cranial and pelvic morphology. The skull exhibited a gonial angle greater than 125°, a gracile chin shape, and small mastoid processes. The pelvis exhibited a flared iliac contour, a very wide sciatic notch, a wide preauricular sulcus, and small raised auricular surfaces. These characteristics are commonly associated with the female phenotype.

Age at death was based on degenerative changes to the pelvis. The left auricular surface exhibited a general loss of billowing with replacement by striae and a distinct coarsening of granularity. This stage of degeneration typically occurs between 30 and 34 years of age.

The woman's oral cavity showed evidence of advancing decay. Attrition ranged from mild to moderate with the maxillary left posterior dentition, right first premolar, and right mandibular central incisor exhibiting the most significant wear and dentin exposure. Small calculus deposits were observed on the maxillary left central incisor and mandibular central and lateral incisors. Eight carious lesions were identified across the dental arcade. Most affected the root surface and exposed the underlying dentin. The left mandibular second molar exhibited a gross caries that destroyed the crown and left the root and pulp chamber exposed. The right maxillary first and second molars exhibited hypercementosis (root swelling), which was likely a reaction to advancing gum disease. Two enamel hypoplasias were identified with one band on the right maxillary canine and one on the left mandibular canine indicating that the individual survived at least one episode of developmental stress as an infant. Shovel-shaped incisors suggest that the individual was a descendent of the local indigenous population.

Osteoarthritis was observed throughout the post-cranial remains. Pitting was observed on the distal epiphysis of the right humerus. Overuse of a joint can lead to the breakdown of tissues that protect the joint from wear and tear. In the case of the primary individual in Burial 17, the woman's overuse of her arm caused damage to the elbow. Very light osteoarthritic lipping was observed on the left glenoid fossa providing additional evidence for overuse of the arms. The left humerus appeared slight bowed and twisted. Though the etiology is unknown, it is possible that prolonged overuse of the arms caused morphological changes to the bone structure. Very light lipping was observed on the superior surface of a thoracic vertebra and a lumbar vertebra.

Based on the analysis of the remaining skeletal elements, the partial remains of at least four additional individuals were recovered with Burial 17 including an unsexed adult, a young adult, and two infants. The following discussion presents the elements assigned to each individual and their estimate ages.

Individual	Element	Estimated Age
Adult Female	Primary Individual	30-34 years
Unsexed Adult	Left Clavicle	Adult
	Left Hand (Naviclar, Capitate, Lunate, Greater and Lesser Multiangular, Triquetral, Metatarsals 1-5, Phalanges (N=3)	
	Right Distal Femur Fragment	
	Right Proximal Tibia Fragment	
	Cranial Fragment	
	Rib Fragments, N=99	
	Unsided Fibula Diaphysis Fragment (Left?)	
	Medial Foot Phalanx	
Young Adult	Permanent Maxillary Right Second Premolar	Young Adult
Infant	Deciduous Left Maxillary First Molar	1 year – 18 Months
Infant	Right Distal Humerus Fragment	Infant
	Left Third Cuneiform	
	Centrum Fragment	
	Neural Arch Fragment	
	Left Coracoid Process (Scapula)	
	Rib Fragment	

Table 11. Additional Skeletal Elements Recovered with Burial 17

Burial 18

Burial 18 contained the remains of at least three individuals including the primary adult male (Table 12). Elements attributed to the primary individual included the cranium, arms, rib fragments, scapulae, clavicles, vertebral column, both ischiums, and legs. Overall preservation was average to poor. Sex determinations were based on morphological characteristics of the cranium, sacrum, and overall robusticity. The skull exhibited a large projecting mastoid process and the mandible exhibited a prominent chin and a gonial angle less than 125°. The sacrum exhibited pronounced curvature. These characteristics are common to the male phenotype. In addition, though the individual's skeletal structure was small overall, muscle attachments appeared more robust than females at the site. Age at death was based on overall size and maturity of the remains. The auricular surfaces were too decomposed to use for age estimation. However, all of the observable epiphyses were fully fused and dental wear of the permanent dentition was moderate indicating the individual was an adult.

The individual's oral cavity showed evidence for oral pathogens and advancing periodontal disease. Significant alveolar resorption was also observed at the right mandibular third molar indicating that the tooth was lost prior to death. Small to moderate calculus deposits were noted on the majority of the remaining observable dentition. The mandibular incisors exhibited significant deposits, which enveloped much of the lingual surfaces. Attrition rates were high with moderate dentin exposure across most teeth. Four carious lesions were observed exclusively on the mandibular dentition. The lesion on the right second premolar was significant enough to expose the underlying dentin. One enamel hypolastic band was noted on the right mandibular canine. Typically these bands indicate developmental stresses during childhood (Goodman et al. 1980). However, the presence of a single band suggests the possibility of direct injury or stress to a single tooth. Shovel-shaped incisors suggest that the individual was a descendent of the local indigenous population.

A large external auditory exostosis was observed on the posterior wall of the right temporal's exterior auditory canal (Figure B.5a). The large size of the exostosis may have impacted the individual's hearing. The right temporal also exhibited an elongated styloid process, often referred to as Eagle's syndrome. Very mild osteoarthritis was observed on the distal epiphysis of the left humerus (Figure B.5b), the proximal end of the right ulna, and on the articular surface of the left patella (Figure B.5c). The first metatarsal and associated phalanges of the left foot exhibited slight lipping indicating that the individual may have suffered an injury to the hallux (big toe) (Figure B.5d). A second medial phalanx also exhibited osteoarthritic lipping on the distal epiphysis. Bony callus formations were observed on the lateral aspects of the left and right fourth metatarsal diaphyses (Figure B.5e). These callus formations may be a response to microfractures associated with injuries sustained while running or during a similar activity.

Figure B.5a: Large external auditory exostosis was observed on the posterior wall of the right temporal's exterior auditory canal, Burial 18.

Figure B.5b: Mild osteoarthritis was observed on the distal epiphysis of the left humerus, Burial 18.

Figure B.5c. Very mild osteoarthritis observed on the articular surface of the left patella, Burial 18.

Figure B.5d: The first metatarsal and associated phalanges of the left foot, showing slight lipping indicating that the individual may have suffered an injury to the hallux (big toe)

Figure B.5e: Bony callus formations on the lateral aspects of the left and right fourth metatarsal diaphyses, Burial 18

Based on the analysis of the remaining skeletal elements, the partial remains of at least two additional individuals were recovered with Burial 18 including a subadult and an infant. The following table presents the elements assigned to each individual and their estimate ages.

Individual	Element	Estimated Age
Adult Male	Primary Individual	Adult
Subadult	Distal Femur Epiphysis	5-10 years
	Proximal Tibia Epiphysis	
	Distal Tibia Epiphysis	
	Patella	
Infant	Right *Pars lateralis* (Occipital)	0-2 years
	Ribs, N=2	
	Scapula Fragment	
	Right Tibia	
	Metatarsals/Carpals and Phalanges	
	Right Capitate	
	Neural Arches, N=7	
	Vertebral Centrums, N=3	

Table 12. Additional Skeletal Elements Recovered with Burial 18

Burial 19

Burial 19 contained the remains of at least four individuals including the primary subadult, an adult, a subadult and an infant (Table 13). Elements attributed to the primary individual included the cranium, arms, rib fragments, scapulae, left clavicle, sternum, vertebral fragments, pelvis, and portions of the legs. Overall preservation of the remains was average to poor. Age at death for the primary individual was based on epiphyseal fusion and dental development and eruption rates. The glenoid fossae of both scapulae were not fused suggesting an age of less than 16 years. The pubis and ischium were fused but the ilium remained independent suggesting an age range of 8-11 years. Finally the unfused humerus epiphysis suggests the child was less than 14 years. Dental development placed the child at approximately 12 +/- 3 years. Taken together, these estimates placed the individual between 9 and 12 years of age at death.

Individual	Element	Estimated Age
Subadult	Primary Individual	9-12 years
Unsexed Adult	Right Lunate	Adult
	Right Hamate	
	Phalanges (Distal and Medial) Foot, N=16	
	Left Pollux	
	Right Pollux	
	Left Navicular	
	Right Navicular	
	Metatarsals 2-4	
	Left and Right Maxillary Third Molars	
Subadult	Deciduous Maxillary Left Central Incisor	2 years +/- 8 months
	Deciduous Maxillary Left Canine	
Infant	Left Clavicle (51.5mm)	7 months – 1 year (Based on Clavicle Length)
	Metacarpals, N=4	
	Phalanx (Hand), N=1	
	First Proximal Phalanx (Foot)	
	Vertebral Neural Arch Fragment	

Table 13. Additional Skeletal Elements Recovered with Burial 19

The child's oral cavity provided little evidence for oral pathogens. A small deposit of calculus was observed on the mandibular left central incisor. Attrition was light with no evidence of dentin exposure. Three distinct enamel hypoplastic bands were observed on the maxillary right canine and second premolar and the mandibular right second premolar, and left first and second premolars suggesting the individual survived at least three episodes of developmental stress as a young child. The child's shovel-shaped incisors suggested that the individual was a descendent of the local indigenous population.

Based on an analysis of the remaining skeletal elements, the partial remains of at least three additional individuals were recovered with Burial 19. Table 13 presents the elements assigned to each individual and their estimate ages.

Burial 21

Based on the analysis of the skeletal elements recovered from a secondary deposit, the partial remains of at least seven individuals were recovered with Burial 21 including an adult male, an unsexed adult, three subadults, one infant, and one fetus (Table 14). Fully mature elements that could not be reliably assigned to the adult male were combined together in a general adult category. The following table presents the elements assigned to each individual and their estimate ages. Numerous small, unidentified bone fragments were also recovered but not assigned to a particular individual.

Mandibular dentition, belonging to the 35-44 year old male, exhibited evidence of advancing decay. Small calculus deposits were observed on the incisors and second and third molars. The left first molar exhibited a carious lesion on the buccal enamel surface, which did not penetrate to the dentin. Attrition was light to moderate with the left anterior teeth and the right first molar exhibiting slight dentin exposure.

The right talus and calcaneus exhibited slight arthritis (Figure B.6). No other pathological conditions were observed on the skeletal remains.

Individual	Element	Estimated Age
Adult Male	Sphenoid Fragment	35-45 years (Auricular Surface)
	Mandible and Associated Dentition	
	Right Radius	
	Portions of Right Hand (Capitate, Hamate, MC 1, Phalanges N=4)	
	Rib Fragments	
	Sternum Fragment	
	Right Innominate	
	Right First Metatarsal	
Unassigned Adult Elements	Portions of Left Hand (Lesser Multangular, MC 5)	Adult
	Rib Fragments	
	Right Scapula Fragments	
	Right Femur Distal Epiphysis	
	Right Tibia	
	Portions of Right Foot (Calcaneus, Cuboid, Navicular, MT 1-3, Phalanx)	
	Portions of Left Foot (Talus, Cuboid, Navicular, Cuneiform 1-3, MT 1-4)	
Subadult	Maxilla and Permanent Dentition	2 years +/- 1 year
	Deciduous Maxillary Dentition	
Subadult	Cranial Fragments	2 years +/- 1 year
	Maxilla and Deciduous/Permanent Dentition	
	Mandible and Deciduous/Permanent Dentition	
	First Cervical Vertebra (Spinous Process)	
	Thoracic Vertebrae (Spinous Process), N=3	
	Rib Fragments	
	Left Femur Diaphysis Fragments	
	Left Tibia Diaphysis Fragment	
	Left Fibula Diaphysis Fragment	
Subadult	Permanent Dentition	2 years +/- 1 year
Subadult	Mandible (No dentition)	0-1 year
	Cranial Fragments (Frontal, Temporal, Sphenoid)	
	Right Humerus Diaphysis	
	Right Radius Diaphysis (9-12 months based on length)	
	Scapula Fragment (Glenoid Fossa)	
	Rib Fragments	
	Lumbar Vertebra Centrum	
	Right Sacral Wing	
	Right Pubis (Unfused)	
	Left Femur Diaphysis Fragment	
	Left Tibia Diaphysis Fragment	
Fetus	Left Tibia Diaphysis	Fetus

Table 14. Skeletal Elements Recovered from Burial 21

Figure B.6: Slight arthritis on the right talus and calcaneus, Burial 21.

Burial 22

Based on the analysis of the skeletal elements recovered from a secondary deposit, the partial remains of at least 14 individuals were recovered with Burial 22 including two adult females, two adult males, eight subadults, one neonate, and one fetus (Table 15). Elements that could not be reliably assigned to a particular individual were combined together in the general adult or general subadult categories. The following table presents the elements assigned to each individual and their estimate ages. Numerous small bone fragments and several deciduous teeth were also recovered but not assigned to a particular individual.

Individual	Element	Estimated Age
Adult Female #1	Partial Cranium with Maxilla and Mandible	Adult
	Maxillary Dentition	
	Left 5th Metacarpal	
	Right and Left Rib Fragments	
	Left Scapula	
	Left and Right Clavicle Fragments	
	Partial Spine (Four Cervical Fragments, Six Thoracic, and Five Lumbar)	
	Sacrum	
	Left Tibia	
	Left Calcaneus Fragment	
	Partial Right Foot: Talus, Calcaneus, Cuboid, MT2, MT4	
Adult Female #2	Left Hand Fragments: Capitate, MC5, Phalanges (N=6)	Adult
	Right Hand Fragments: Lunate, Lesser Multangular, Capitate, Hamate, MC5	
Adult Male #1	Right Arm: Humerus, Ulna, Radius	35-39 Years
	Left Arm: Humerus, Ulna	
	Left Innominate	
	Right Pubis Fragment	
	Left Leg: Femur, Tibia, Fibula, MT2-5	
	Right Leg: Femur, Fibula, Talus, Calcaneus, MT1-5, Phalanx (N=1)	
Adult Male #2	Left Innominate Fragment: Pubis (Slightly smaller than Male #1)	Adult
	Left Leg: Femur, Tibia, Fibula, Talus, Cuboid, Navicular, Cuneiform 1	
	Right Leg: Femur, Tibia, Fibula, Cuneiform 3, MT4	

Table 15. Skeletal Elements Recovered from Burial 22 (continued on next page)

Subadult #1	Left Leg: Femur, Tibia, Fibula Diaphyses	12-15 Years
	Right Leg: Tibia, Fibula Diaphyses	
Subadult #2	Cranial Fragments: Parietal, Temporal, Occipital (Unfused), Sphenoid	3-5 Years
Subadult #3	Cranial Fragments: Frontal, Parietal, Temporal, Occipital (Unfused), Sphenoid	3-5 Years
Subadult #4	Left Scapula Fragments	~ 2-4 Years
	Right Scapula Fragments	
	Right Leg: Femur Diaphysis and Calcaneus	
	Left Leg: Femur Diaphysis and Calcaneus	
Subadult #5	Right Arm: Humerus, Ulna, Radius Diaphyses	1-1.5 Years
	Left Ulna Dialysis	
	Left Leg: Femur, Tibia, Fibula Diaphyses	
	Right Leg: Femur and Tibia Diaphyses	
Subadult #6	Cranial Fragments	6-18 Months (Slightly Larger)
	Maxilla (Left Side) and Partial Dentition	
Subadult #7	Mandible with Partial Dentition	6-18 Months (Slightly Smaller)
	Basilaris (Occipital)	
Subadult #8 (Neonate)	Left Arm: Humerus and Radius Diaphyses	0-3 Months
	Left Tibia and Fibula Diaphyses	
	Right Fibula Diaphysis	
Subadult #9 (Neonate)	Right Femur Diaphysis	Neonate
	Left Leg: Femur, Tibia, Fibula Diaphyses Fragments	
Subadult #10 (Fetus)	Right Orbit Fragment	26-30 Weeks In Utero
	Cervical Vertebra (1/2 Neural Arch)	
	Right Arm: Humerus and Ulna Diaphyses	
Unassigned Adult Elements	Permanent Maxillary Right and Left Central Incisors	Adult
	Permanent Mandibular Left M1	
	Tibia Shaft Fragment	
	Fibula Shaft Fragment	
	Left Patella	
	Right Patella	
	Foot Phalanges (N=19)	

Table 15. Skeletal Elements Recovered from Burial 22 (continued on next page)

Unassigned Subadult Elements	Permanent Maxillary Right M2	10 Years +/- 2 Years
	Permanent Molar Fragments	Subadult
	Permanent Maxillary Left First Molar	18 Months – 2 Years +/-1 year
	Deciduous Maxillary Right Lateral Incisor and M2	18 Months +/- 6 Months
	Deciduous Maxillary Right Canine	6 Months +/- 3 Months
	Deciduous Maxillary Left Lateral Incisor	1 Year +/- 6 Months
	Deciduous Maxillary Left M1	At Least 9 Months +/- 6 Months
	Deciduous Maxillary Left M2 Fragment	Unknown
	Rib Fragments (N=99+) from Multiple Children	1-5 Years
	Right Ulna Distal Epiphysis	Subadult
	Metacarpal Fragments (N=2)	Subadult
	Hand Phalanges (N=3)	Subadult
	Left Ilium	0-2 Years
	Right Tibia Diaphysis	1-1.5 Years
	Left Femur Diaphysis	0-1 Year
	Metatarsal Fragment	0-1 Year
	Phalanx	0-1 Year
	Ischium Body	Neonate

Table 15. Skeletal Elements Recovered from Burial 22

Sex determinations for Adult Female 1 were based on morphological characteristics of the cranium, sacrum, and overall robusticity. The mastoid processes were small with slight projection, the nuchal line was slight, the sacrum exhibited very slight curvature, and the elements were generally small and gracile. These characteristics are commonly associated with the female phenotype. Age at death could not be reliably assessed beyond young adult. The cranial sutures appeared open at the time of death, while the palatine sutures exhibited minor closure. The incisive palatine suture was fully fused and the anterior medial palatine suture exhibited early signs of fusion. These age-related changes are commonly associated with young adults typically over 20 years of age. Stature estimates, based on maximum length of the left tibia, indicated that the individual stood approximately 150-157 centimeters tall, or 4’11”-5’2”. Shovel-shaped incisors suggested that the individual was a descendent of the local indigenous population.

The individual's oral cavity provided evidence for oral pathogens and advancing periodontal disease. The alveolar bone on the maxilla and mandible exhibited moderate resorption. Small deposits of calculus were present on all the observable maxillary dentition. The maxillary dentition also exhibited moderate attrition with dentin exposure on half of the observable teeth. The right temporomandibular joint exhibited evidence of osteoarthritis. No cause of death was observed.

Sex determinations for Adult Male #1 were based on morphological characteristics of the pelvis and overall robusticity. The left innominate exhibited a narrow sciatic notch and a large flattened auricular surface. Age estimates were based on degenerative changes to the auricular surface. The left auricular surface exhibited uniform coarse granularity with marked reduction of billowing and striae, slight microporosity, and minimal changes to the apex. This stage of degeneration typically occurs between 35-39 years of age. Stature estimates, based on maximum length of the left tibia, indicated that the individual stood approximately 163-168 centimeters tall, or 5'4"-5'6". Osteoarthritis was observed on the right talus and calcaneus. Lipping and pitting was observed on the articular surfaces between the two elements. Lipping was also observed on the articular surface of the right pollux.

Stature estimates for Adult Male #2, based on maximum length of the left tibia, indicated that the individual stood approximately 158-164 centimeters tall, or 5'2"-5'5". No pathological conditions were observed on the tibia.

The left and right central incisors placed in the unassigned adult category, exhibited hypercementosis (root swelling), which is likely a reaction to advancing gum disease. No other pathological conditions were observed on the skeletal remains.

Burial 23

Burial 23 contained the remains of at least three individuals including the primary adult female, an adult male, and a subadult (Table 16). Elements attributed to the primary individual included the cranium, arms, rib fragments, scapulae, clavicles, sternum, hyoid, vertebrae fragments, and legs. Preservation of the remains was average to poor. Sex determinations of the primary adult female were based on morphological characteristics of the cranium and overall robusticity. The orbital margin was sharp and the brow ridges were slight, and the observable skeletal elements appeared small and gracile. Age at death was based on the development of the right clavicle, which exhibited an unfused medial epiphysis. Complete fusion typically occurs by 30 years of age suggesting that this individual was a young adult (Scheuer and Black 2000).

The individual's oral cavity exhibited evidence for oral pathogens. The alveolar margin of the maxilla was partially resorbed indicating the presence of periodontal disease, which left the dentition susceptible to oral pathogens. Additionally, the right maxillary first molar was lost prior to death and the alveolar bone was partially resorbed. The maxillary right incisors and canine may also have been lost prior to death, but the alveolar bone was not preserved well enough around these teeth for a definitive conclusion. With the exception of the maxillary third molars, the remaining observable dentition exhibited light calculus deposits. Attrition was light with only the maxillary right first premolar and both maxillary second molars exhibiting dentin exposure. One carious lesion was observed on the mandibular left second molar. The pit lesion did not reach the dentin. No other pathological conditions were observed.

Sex determinations for the secondary male mandible were based on chin shape and the gonial angle, which was less than 125°. Dentition associated with this individual included most of the permanent mandibular teeth and the maxillary right third molar and left first molar. The maxillary first molar, mandibular right central incisor and canine, and the mandibular left incisors exhibited light calculus deposits. Attrition was light to moderate with only the mandibular first molars exhibiting dentin exposure. Two carious lesions were observed including one on the maxillary left first molar and one on the mandibular left canine. Neither lesion reached the dentin. The mandibular left canine also exhibited a chip, which affected only the enamel surface. No other pathological conditions were observed on the skeletal remains.

Individual	Element	Estimated Age
Adult Female	Primary Individual	Adult Less than 30 Years
Adult Male	Mandible	Adult
	Maxillary and Mandibular Dentition	
Subadult	Metacarpal	3 Years +/- 1 Year
	Deciduous Maxillary Right Second Molar	
	Permanent Maxillary Right First Molar	
Unassigned Adult Elements	Left Hand: First Metacarpal, Greater Multangular, Phalanges (N=5)	Adult

Table 16. Additional Skeletal Elements Recovered with Burial 23

Burial 24

Burial 24 contained the remains of at least four individuals including the primary adult male, an unsexed adult, and two subadults (Table 17). Elements attributed to the primary individual included the cranium, arms, rib fragments, right scapula, right clavicle, vertebral column, pelvis, and legs. Preservation of the remains ranged from good to poor. Sex determinations of the primary male were based on morphological characteristics of the cranium, pelvis, and sacrum.

The orbital margins were rounded, the chin was squared, the gonial angle was less than 125°, and the mastoid processes were large and projected laterally. The auricular surfaces of the pelvis were large and flattened, while the curvature of the sacrum was distinct. These characteristics are commonly associated with the male phenotype.

Age at death was based on cranial suture closure and degenerative changes of the pelvis. Cranial and palatine sutures were partially fused indicating the individual was between 20-40 years of age at death. The auricular surfaces exhibited a slight reduction of billowing with replacement by striae. No changes were observed on the apex. These changes are typically observed between 25-29 years of age. Taken together, these estimates place the individual between 20 and 30 years of age.

The individual's oral cavity showed evidence of oral pathogens and periodontal disease. The maxilla and mandible exhibited moderate alveolar resorption. Light to moderate calculus deposits were observed across the dentition. Attrition was light to moderate with the left maxillary first molar and the right mandibular first molar exhibiting the most significant dentin exposure. Three enamel hypoplastic bands were observed on the left canines indicating the individual survived at least three episodes of developmental stress as an infant. Shovel-shaped incisors suggested that the individual was a descendent of the local indigenous population. No other pathological conditions were observed on the primary individual.

The maxillary central incisor associated with the secondary adult was shovel-shaped and slightly worn. The shovel-shaped incisor suggested that the individual was a descendent of the local indigenous population. No other pathological conditions were observed on the fragmentary remains.

Individual	Element	Estimated Age
Adult Male	Primary Individual	20-30 Years
Unsexed Adult	Permanent Maxillary Left Central Incisor	Adult
Subadult	Permanent Maxillary Right Second Premolar	~ 8 Years +/- 2 Years
Subadult	Right Rib Fragment	Infant
	Right Femur Diaphysis	

Table 17. Additional Skeletal Elements Recovered with Burial 24

Burial 25

Burial 25 contained the remains of at least two individuals including the primary subadult and at least one unsexed adult (Table 18). Elements attributed to the primary individual included the cranium, left arm, right ulna and radius, rib fragments, left scapula, sternum, vertebrae fragments, left ilium, and both femur diaphyses. Overall preservation of the remains was poor. Age at death of the primary subadult was based on dental development. The permanent right maxillary second premolar exhibited partial root development while the root of the left mandibular first molar was 50 percent complete. This stage of development typically corresponds to 6 years +/- 2 years of age. No pathological conditions were observed on the primary individual or the fragmentary remains.

Individual	Element	Estimated Age
Subadult	Primary Individual	6 Years +/- 2 Years
Unsexed Adult	Medial Hand Phalanx	Adult
	Right Cuneiform	

Table 18. Additional Skeletal Elements Recovered with Burial 25

Burial 26

Burial 26 contained the remains of at least two individuals including the primary subadult and at least one unsexed adult (Table 19). Elements attributed to the primary individual included the cranium, arms, left scapula, vertebrae fragments, right ilium, and left femurs and tibiae. Overall preservation of the remains was poor. Age at death for the primary subadult was based on dental development. The child's permanent dentition including the maxillary and mandibular central incisors and the first molars exhibited partial crown development. The deciduous dentition exhibited partial root development. The mandibular second molars exhibited partial to complete crown development. This stage of development typically occurs at 2 years +/- 6 months. Shovel-shaped incisors suggest that the individual was a descendent of the local indigenous population.

The child's deciduous dentition showed evidence of oral pathogens. The right maxillary central incisor and the mandibular central incisors exhibited occlusal caries while the mandibular left lateral incisor exhibited a lesion on the lingual surface. All carious lesions were significant enough to affect the underlying dentin. Seven enamel hypoplastic defects were observed on the anterior deciduous dentition including pits and bands of discoloration. One defect was observed on each tooth indicating the child survived at least one episode of developmental stress as a fetus. Enamel hypoplasias that develop on deciduous dentition are often referred to as "Cuspal Enamel Hypoplasias" or CEH, which begin at the very onset of tooth development (Ogden et al. 2007:960). The presence of developmental stress at beginning of cusp development suggests the mother was malnourished or sick during pregnancy and unable to protect the growing fetus from significant metabolic stress during the late stages of pregnancy including malnutrition, illness, or pregnancy related stresses (Ogden et al. 2007:964). No other pathological conditions were observed on the primary individual or the fragmentary remains.

Individual	Element	Estimated Age
Subadult	Primary Individual	2 Years +/- 6 months
Unsexed Adult	Rib Fragments (N=3)	Adult
	Left Glenoid Fossa (Scapula)	
	Clavicle Fragment	

Table 19. Additional Skeletal Elements Recovered with Burial 26

Burial 28

Burial 28 contained the remains of at least three individuals including the primary subadult, at least one unsexed adult and one subadult (Table 20). Elements attributed to the primary individual included the cranium, left arm, right humerus, sternum, fifth lumbar vertebra, and both femurs and tibiae. Overall preservation of the remains was poor. Age at death for the primary subadult was based on dental development and overall size. The deciduous maxillary first molars had fully developed crowns while the crowns of the permanent mandibular first molars were 75 percent complete. Children typically reach this stage of development at 18 months +/- 6 months of age. No pathological conditions were observed on the primary burial or fragmentary remains.

Individual	Element	Estimated Age
Subadult	Primary Individual	18 Months +/- 6 Months
Unsexed Adult	Distal Foot Phalanges (N=3)	Adult
	Rib Fragments (N=2)	
Subadult	Neural Arch Fragments (N=3)	Subadult
	Deciduous Maxillary Right Second Molar	9 Months – 1 Year

Table 20. Additional Skeletal Elements Recovered with Burial 28

Burial 29

Burial 29 was only partially excavated during the 2010 field season. Table 21 presents the remains included in Burial 29 to date. At least three individuals were present including one unsexed adult, one infant, and one fetus. The right and left proximal femur shaft fragments likely belong to the same individual. The remainder of the elements could not reliably be assigned to a particular individual. With the exception of the permanent mandibular incisor, which was extremely worn and exhibited little intact enamel, no pathological conditions were observed on the fragmentary remains.

Individual	Element	Estimated Age
Unsexed Adult	Right Proximal Femur Shaft Fragment	Adult
	Left Proximal Femur Shaft Fragment	
	Left Distal Femur Shaft Fragment	
	First Proximal Hand Phalanx (Right?)	
	Hand Phalanges (N=4)	
	Foot Phalanges (N=3)	
	Long Bone Fragments (N=2)	
	Fibula Shaft Fragment – Proximal End	
	Vertebra Fragment – Transverse Process	
	Permanent Mandibular Incisor	
Subadult	Deciduous Mandibular Left Canine	2 Years +/- 8 Months
	Phalanges (N=5)	Infant
	Metacarpal/tarsal (N=1)	Infant
	Left Rib Fragment	Infant
Subadult	Cranial Fragment	Infant/Neonate
	Left Sacral Wing	Fetus
	Subadult Epiphysis (Humeral Head?)	Fetus/Neonate

Table 21. Skeletal Elements Recovered with Burial 29

Burial 30

Individual	Element	Estimated Age
Unsexed Adult	Left Fibula	Adult
	Vertebra Fragment (Lower Thoracic or Upper Lumbar)	
	Mandible Fragment (Right Side)	
	Left Lunate	
	Left Mandibular First Molar	
Subadult	Left Mandibular Second Premolar	7+ Years
	Left Calcaneus Fragment	
	Left Talus	
	Scapula Fragment	
	Left Distal Radius Epiphysis (Unfused)	
	Thoracic Centrum (Unfused)	Less that 6 Years
	Pars Basilaris (Occipital)	
	Phalanx	
	Right Sacral Wing	Fetal

Table 22. Skeletal Elements Recovered with Burial 30

Burial 30 was only partially excavated during the 2010 field season. Table 22 presents the remains included in Burial 30 to date. At least four individuals are present including one unsexed adult, two subadults, and one fetus. Numerous bone fragments were also recovered with the remains but were not preserved well enough for positive identification. No pathological conditions were observed on the fragmentary remains.

Burial 31

Burial 31 contained the remains of at least five individuals including the primary adult male, one unsexed adult, one subadult, and one neonate (Table 23). Elements attributed to the primary individual included the cranium, arms, rib fragments, scapulae, clavicles, sternum, hyoid, vertebrae fragments, right ilium, and legs. Overall preservation of the remains was poor. Sex determinations for the primary adult male were based on morphological characteristics of the cranium and overall size and robusticity of the remains. The chin was squared, the gonial angle was less than 125°, the mastoid processes projected slightly outward. These characteristics are commonly associated with the male phenotype. Age at death was based on dental wear observed on the recovered dentition. Moderate wear suggests the individual was not a young adult, but likely middle aged.

Individual	Element	Estimated Age
Adult Male	Primary Individual	30 + Years
Unsexed Adult	Permanent Maxillary Right Canine	Adult
Subadult	Left Rib	Infant
	Proximal Humerus Epiphysis	
	Hand Phalanx	
Subadult	Neural Arch Half	Neonate

Table 23. Additional Skeletal Elements Recovered with Burial 31

The individual's oral cavity showed evidence for oral pathogens and periodontal disease. The alveolar margin on the mandible was slightly receded. As stated above, dental attrition was moderate with all but the maxillary left third molar exhibiting dentin exposure. Four small carious lesions were observed on the maxillary left first molar (N=2), the left mandibular central incisor, and the second premolar. Only the lesion on the left mandibular central incisor was significant enough to affect the underling dentin. One large gross caries was observed on a loose tooth, which destroyed the crown and precluded identification of the tooth position. Small calculus deposits were observed on the anterior maxillary and mandibular dentition. The left maxillary first molar exhibited hypercementosis (root swelling), which was likely a reaction to advancing gum disease. One enamel hypoplastic band was identified on the right maxillary canine indicating that the individual survived at least one episode of developmental stress as a young child. Shovel-shaped incisors suggested that the individual was a descendent of the local indigenous population. No other pathological conditions were observed on the primary individual or fragmentary remains.

Burial 32

Burial 32 contained the remains of at least three individuals including the primary adult male, one unsexed adult, and one subadult (Table 24). Elements attributed to the primary individual included the cranium, left arm, right hand, rib fragments, scapulae, clavicles, vertebrae fragments, left ilium, right pubis, and legs. Overall preservation of the remains was poor. Sex determinations for the primary adult male were based on morphological characteristics of the cranium and pelvis, and overall size and robusticity. The skull exhibited rounded orbital margins, a distinct brow ridge, large, laterally-projecting mastoid processes, and a gonial angle less than 125°. The auricular surface was large and flattened. These characteristics are commonly associated with the male phenotype.

Age at death was based on cranial suture closure and degenerative changes to the auricular surface. Suture lines at Bregma showed early stages of fusion, the incisive suture was fully fused, and the anterior median palatine suture was partially fused suggesting the individual was approximately 40 years of age. The auricular surface of the left innominate exhibited uniform, coarse granularity with a marked reduction of both billowing and striae, and slight microporosity. There were slight changes in the retroauricular area and minimal changes seen at the apex. These degenerative changes typically occur by 35-39 years of age. Taken together it is likely that this individual was between 35-40 years of age.

The individual's oral cavity showed evidence for oral pathogens and moderate periodontal disease. The alveolar margin on the mandible was moderately receded. Small calculus deposits were observed on the left mandibular canine, premolars, and first molar. Attrition was light to moderate with more than half of the dentition exhibiting dentin exposure. Five carious lesions were observed. Lesions on the left maxillary second molar and the right third molar were significant enough to affect the underlying dentin. The left mandibular second premolar exhibited slight hypercementosis (root swelling), which was likely a reaction to advancing gum disease. Three enamel hypoplasial bands were observed on three of the four canines, with one band on each tooth, suggesting that the individual survived at least one episode of developmental stress as a young child. Shovel-shaped incisors suggested that the individual was a descendent of the local indigenous population. No other pathological conditions were observed on the primary individual or fragmentary remains.

Individual	Element	Estimated Age
Adult Male	Primary Individual	35-40 Years
Unsexed Adult	Permanent Right Mandibular Molar	Adult
Subadult	Unspecified Vertebra	1-2 Years

Table 24. Additional Skeletal Elements Recovered with Burial 32

Burial 33

Burial 33 contained the fragmentary remains of only one subadult individual. Only the left arm, lumbar vertebrae, left and right ilia, and left and right femurs were recovered. Age at death was based on the development of the lumbar vertebrae. The mamillary processes were fully fused but the annular rings were not. These time sensitive developmental markers indicate that the child was approximately 8-10 years old at the time of death. No pathological conditions were observed on the fragmentary remains.

Burial 34

Burial 34 contained the fragmentary remains of one infant. Only the left tibia and fibula diaphyses, and the right femur, tibia, and fibula diaphyses were recovered. Specific age markers were not preserved well enough for a definitive age estimate, and no measurements could be taken of the fragmentary remains. Based on the overall size of the remains, the child was approximately 0-2 years old at the time of death. No pathological conditions were observed on the fragmentary remains.

Burial 36

Burial 36 contained the extremely fragmentary and poorly preserved remains of at least two individuals including the primary adult and a subadult (Table 25). Elements attributed to the primary individual included the left radius, portions of both hands, the sacrum, and portions of both legs. Sex and age determinations were impossible to determine for the primary adult due to extremely poor preservation. Portions of the left radius and hand, the right hand, sacrum and coccyx, left and right legs, and the right mandibular lateral incisor were all that was recovered from the individual. Based on overall size and skeletal maturity of the remains, the individual was classified as an adult.

The lateral incisor was fully developed. Moderate wear of the crown left small areas of dentin exposed, and a small deposit of calculus had formed along the gum line. A chip was observed on the enamel surface, but the underlying dentin was left undisturbed. No other pathological conditions were observed on the primary individual or fragmentary remains.

Individual	Element	Estimated Age
Adult	Primary Individual	Adult
Subadult	Proximal Epiphysis of a Foot Phalanx	1-5 Years
	Right Third Metacarpal	

Table 25. Additional Skeletal Elements Recovered with Burial 36

Burial 37

Individual	Element	Estimated Age
Unsexed Adult	Unspecified Foot Phalanx	Adult
	Unspecified Hand Phalanx	
	Left Cuboid	
	Right Glenoid Fossa (Scapula)	
	Left Humerus Fragment (Distal Epiphysis)	
	Right Orbit Fragment (Male?)	Adult Male?
	Phalanges Unidentified (N=6)	
	Sesimoid	
	Permanent Maxillary Lateral Incisor	
	Permanent Left Maxillary Central Incisor	
	Permanent Left Maxillary Lateral Incisor	
	Permanent Right Maxillary First Molar	
	Permanent Mandibular Left Central Incisor	
	Permanent Mandibular Right Lateral Incisor	
	Permanent Mandibular Right Canine	
Subadult	Unspecified Phalanx	Subadult
	Deciduous Maxillary Right Lateral Incisor	6 Months – 1 Year
	Deciduous Maxillary Right Second Molar	
	Deciduous Maxillary Left Second Molar	
	Deciduous Maxillary Right First Molar	
	Deciduous Maxillary Right First Molar	
	Deciduous Mandibular Left Second Molar	
Fetus	Right Humerus	Approx. 30 weeks in Utero

Table 26. Skeletal Elements Recovered with Burial 37

Burial 37 was only partially excavated during the 2010 field season. Table 26 presents the remains included in Burial 37 to date. At least three individuals are present including one unsexed adult, one subadult, and one fetus. Numerous bone fragments were also recovered with the remains but were not preserved well enough for positive identification. Beyond minor calculus deposits and mild to moderate attrition on the permanent dentition, no pathological conditions were observed on the fragmentary remains.

Burial 38

Burial 38 was only partially excavated during the 2010 field season. Table 27 presents the remains included in Burial 38 to date. At least three individuals are present including one unsexed adult, one subadult, and one fetus. Numerous bone fragments were also recovered with the remains but were not preserved well enough for positive identification. Beyond moderate wear on the permanent molar fragment, no pathological conditions were observed on the fragmentary remains.

Individual	Element	Estimated Age
Unsexed Adult	Cranial Fragments (N=2)	Adult
	Mandible Fragment (Left Ascending Ramus)	
	Humerus Fragments (Head and Distal Epiphysis)	
	Distal Hand Phalanx	
	Medial Foot Phalanx	
	Phalanges (N=5)	
	Vertebra Fragment	
	Rib Fragment	
	Permanent Molar Fragment (Possibly M2)	
Subadult	Left Lesser Multangular	Subadult
	Left Radius Distal Epiphysis (Unfused)	
	Unspecified Metacarpal	
	Right. Lunate	
	Deciduous Right Mandibular Lateral Incisor	2-4 Years
Fetus	Left Sacral Wing	Fetal
	Neural Arch Fragment (Cervical?)	

Table 27. Skeletal Elements Recovered with Burial 38

Burial 39

Burial 39 was only partially excavated during the 2010 field season. Table 28 presents the remains included in Burial 39 to date. At least one subadult is represented. Beyond slight wear on the permanent canine and molar, no pathological conditions were observed on the fragmentary remains.

Individual	Element	Estimated Age
Subadult	Permanent Right Mandibular Second Molar	12-16 Years
	Permanent Left Mandibular Canine	
	Fourth Metacarpal	
	Hand Phalanges	

Table 28. Skeletal Elements Recovered with Burial 39

Burial 40

Burial 40 was only partially excavated during the 2010 field season. Table 29 presents the remains included in Burial 40 to date. At least one unsexed adult is represented. Based on the size of the third right metacarpal and the dentition, the remains may represent a male individual. Beyond light to moderate wear on the dentition, no pathological conditions were observed on the fragmentary remains.

Individual	Element	Estimated Age
Adult Male?	Third Right Metacarpal	Adult
	Hand Phalanx	
	Permanent Left Maxillary First Premolar, Articulates with Second Premolar	
	Permanent Left Maxillary Second Premolar, Articulates with First Premolar	
	Permanent Left Maxillary Third Molar, Minor Wear	

Table 29. Skeletal Elements Recovered with Burial 40

Burial 41

Burial 41 contained the fragmentary remains of approximately four individuals including the primary adult male, two subadults, and one fetus (Table 30). Elements attributed to the primary individual included the cranium, arms, rib fragments, scapulae, left clavicle, sternum, hyoid, fragments of the vertebral column, portions of the pelvis, and legs. Overall preservation of the remains was good to poor. Sex determinations for the primary adult male were based on morphological characteristics of the mandible and pelvis and overall size and robusticity. The chin shape was squared and the gonial angle was less than 125°. The sciatic notch of the right innominate was very narrow. These characteristics are common to the male phenotype. Shovel-shaped incisors suggest that the individual was a descendent of the local indigenous population.

The individual's oral cavity exhibited evidence of oral pathogens. The right mandibular third molar may have been lost just prior to death. No evidence of remodeling of the alveolar margin was observed. A small calculus deposit was observed on the right maxillary second molar and a large deposit was noted on the left mandibular first molar. Attrition was light to moderate with most teeth exhibiting dentin exposure. The right maxillary second molar exhibited a small chip that did not affect the underlying dentin. No other pathological conditions were observed on the fragmentary remains.

Individual	Element	Estimated Age
Adult Male	Primary Individual	Adult
Subadult	Left Ilium	1-2 Years
	Vertebrae Fragments	
	Left Femur, Proximal Fragment	0-1 Years
	Rib Fragments	
	Long Bone Diaphysis (Femur?)	Neonate?
	Sacral Wing	Neonate/Fetus

Table 30. Skeletal Elements Recovered with Burial 41

Burial 42

Individual	Element	Estimated Age
Unsexed Adult	Hand Phalanges (N=4) Medial and Distal	Adult
	Innominate Fragment	
	Left Mastoid Process (Male?)	
	Left Coranoid Process (Mandible)	
	Left Zygomatic	
	Left Ulna Fragment, Distal Epiphysis	
	Right Pollux	
	Permanent Maxillary Left Lateral Incisor, Minor Attrition, Shovel-shaped	
	Permanent Maxillary Right Lateral Incisor, Minor Attrition, Shovel-shaped	
	Permanent Maxillary Right First Premolar, Moderate Attrition	
	Permanent Maxillary Right Second Premolar, Moderate Attrition	
	Permanent Maxillary Right First Molar, Moderate Attrition	
	Permanent Left Mandibular Canine, Light Calculus, Minor Attrition	
	Permanent Right Mandibular Canine, Light Calculus, Minor Attrition	
	Permanent Mandibular Left Second Premolar, Minor Attrition	
	Permanent Mandibular Left First Molar, Minor Attrition	
Subadult	Deciduous Maxillary Right Canine, Complete crown	9 Months-1 Year
Fetus	Left Rib	Fetal
	Left Sacral Wing	

Table 31. Skeletal Elements Recovered with Burial 42

Burial 42 was only partially excavated during the 2010 field season. Table 31 presents the remains included in Burial 40 to date. At least one adult, one subadult, and one fetus are represented. With the exception of small calculus deposits and minor to moderate attrition on the permanent dentition, no pathological conditions were observed on the fragmentary remains.

Burial 45

Burial 41 contained the extremely well preserved partial remains of a fetus approximately 30-34 weeks in utero. Elements attributed to the primary individual included the cranium, portions of both arms, all ribs, scapulae, clavicles, portions of the vertebral column, the ilia, and left femur and tibia. Age at death was based on overall size and development of the remains, and measurements of the long bones. The crown of the left maxillary central incisor was partially developed suggesting the child was approximately 7 months +/- 2 months in utero. No pathological conditions were observed on the remains. This individual may represent a modern inclusion in the historic cemetery.

Burial 46

Burial 46 contained the fragmentary remains of approximately two individuals including the primary subadult and a fetus (Table 32). Elements attributed to the primary individual included the cranium, left arm, right hand, all ribs, right scapula, left clavicle, sternum, lumbar vertebrae and fragments of the upper vertebral column, right ilium, left femur, and the right foot. Overall preservation of the remains was good to poor. Age at death for the primary subadult was based on dental development and overall size of the individual. The deciduous canines had complete roots with open apices while the crown of the permanent maxillary right canine was 75 percent complete. The crowns of the permanent mandibular first molars were 50 percent complete. This stage of development typically occurs by 4 years +/- 1 year. Beyond minor attrition on the deciduous dentition, no pathological conditions were observed on the primary individual or fragmentary remains.

Individual	Element	Estimated Age
Subadult	Primary Individual	4 Years +/- 1 Year
Fetus	Left Parietal	3-5 Months in Utero
	Left Distal Humerus Fragment	

Table 32. Skeletal Elements Recovered with Burial 46

General Bone Collection

During excavation a number of loose skeletal elements were recovered that were not associated with a particular burial. Numerous bone fragments were also recovered but were not preserved well enough for positive identification. These included 438 identifiable elements by collection bag and provides general age, development, and pathological data if available with notes on matching elements.

MINIMUM NUMBER OF INDIVIDUALS

Following techniques outlined in Ubelaker (1974) the minimum number of individuals (MNI) was determined for each box of remains. In general, skeletal elements were examined for duplication and for major differences in development and morphological differences related to age and sex, as well as overall health. Each box of remains was then sorted to identify the primary interment and then the secondary individuals based on skeletal element inclusions.

Table 34 provides a break out of major elements of the skeleton. Though each skeletal element recovered during excavation was inventoried, this list is limited the major elements that showed the greatest numbers. Poor overall preservation and partial excavations may have likely reduced the counts for some smaller elements such as those of the hands and feet. Based on the mandibles and right femurs, which were the most common identifiable elements, there are at least 34 people represented in the skeletal assemblage excavated in 2010. This count reflects the absolute minimum number of individuals present, and should be treated as a very conservative estimate.

Skeletal Element	Side – Left	Side – Right
Mandible	**34**	-
Humerus	26	29
Ulna	28	25
Radius	24	23
Femur	33	**34**
Tibia	31	25
Fibula	22	19

Table 34. Minimum Number of Individuals Based on Major Elements

The maximum number of individuals (MxNI) was calculated by identifying the number of people represented by each box ignoring the possibility that individuals may be represented in two separate features. There are at most 124 individuals present (Table 35). This number is an obvious over inflation of the true number of individuals because some individuals were likely included in multiple boxes.

Burial	Male	Female	Adult	Child	Total
3		1		4	5
4			1	1	2
5			1	2	3
6	1		1		2
7	1		2	4	7
8			1	5	6
9	1	1	2	2	6
10				1	1
12				1	1
13			1	2	3
14			1	1	2
15		1	1	1	3
17		1	2	2	5
18	1			2	3
19			1	3	4
21	1		1	5	7
22	2	2		10	14
23	1	1		1	3
24	1		1	2	4
25			1	1	2
26			1	1	2
28			1	2	3
29			1	2	3
30			1	3	4
31	1		1	2	4
32	1		1	1	3
33				1	1
34				1	1
36			1	1	2
37			1	2	3
38			1	2	3
39				1	1
40	1				1
41	1			3	4
42			1	2	3
41				1	1
46				2	2
Total	13	7	27	77	124

Table 35. Maximum Number of Individuals By Burial

While both the MNI and MxNI under and overinflate the true number of individuals recovered from the Open Chapel, they provide estimate on which to approximate population size. Between 34 and 124 individuals were recovered during the 2010 excavations. Several individuals were only partially exposed in the walls of the excavation unit suggesting that the true number of individuals buried at the Open Chapel is as yet unknown.

STATE OF HEALTH AT THE OPEN CHAPEL CEMETERY

Few illnesses leave tangible marks on the skeleton, and as a result, the identification of a specific cause of death is difficult to reliably establish based solely on the skeletal tissues. This difficulty is magnified when the skeletal population is poorly preserved. However, chronic conditions and significant injuries are often visible on the skeleton and provide some insight into the stress factors acting on a particular individual. In an attempt to assess the overall health of the individuals buried in the Open Chapel cemetery, health and dental health registries were compiled. A total of 41 distinct health responses were recorded (Table 36).

Burial	Element	Location	Form	Severity	Diagnosis
3	Cranium	Maxilla	Resorption	Slight	Periodontal Disease
4	Right Femur	Diaphysis	Bowing	Moderate	Developmental or Nutritional Deficiency
6	Cranium	Mandible	Resorption	Slight	Periodontal Disease
7	Cranium	Maxilla and Mandible	Resorption	Moderate	Periodontal Disease
7	Cervical Vertebrae	Body	Ossification of Connective Tissue	Slight	Osteoarthritis
7	Thoracic Vertebrae	Neural Arch, Superior Articulations	Ossification of Connective Tissue	Moderate	Osteoarthritis
8	Cranium	Maxilla and Mandible	Resorption	Slight	Periodontal Disease
9	Right Clavicle	Lateral end of Diaphysis	Injury	Severe	Pseudoarthrosis from Fracture
9	Thoracic Vertebra (No.12)	Body	Injury	Severe	Compression Fracture

Table 36. Health Registry (continued on next page)

9	Lumbar Vertebra (No. 1)	Body	Injury	Severe	Compression Fracture
9	Lumbar Vertebra (No. 2)	Body	Injury	Severe	Compression Fracture
9	Lumbar Vertebrae	Body	Ossification of Connective Tissue	Severe	Osteoarthritis
15	Cranium	Maxilla	Resorption	Moderate	Periodontal Disease
15	Cranium	Endocranial Surface	Osteolysis	Moderate	Arachnoid Granulations
15	Right Foot	Phalanges of Fifth Toe	Injury	Severe	Crushing Injury and Possible Subluxation
17	Right Humerus	Distal Epiphysis	Degeneration	Slight	Osteoarthritis, Activity Stress
17	Left Scapula	Glenoid Fossa	Ossification of Connective Tissue	Slight	Osteoarthritis, Activity Stress
17	Left Humerus	Diaphysis	Bowing	Slight	Idiopathic, Possible Overuse
17	Right Ulna	Coronoid Process	Ossification of Connective Tissue	Slight	Osteoarthritis
17	Thoracic Vertebra	Body	Ossification of Connective Tissue	Slight	Osteoarthritis
17	Lumbar Vertebra	Body	Ossification of Connective Tissue	Slight	Osteoarthritis
18	Cranium	Right Temporal	Growth of Cartilaginous Tissue	Moderate	Auditory Exostosis
18	Cranium	Right Temporal	Cartilage Ossification	Moderate	Eagle's Syndrome (Elongated Styloid Process)
18	Cranium	Mandible	Resorption	Moderate	Periodontal Disease
18	Left Humerus	Distal Epiphysis - Lateral Condyle	Degeneration	Slight	Osteoarthritis
18	Left Patella	Lateral Facet	Degeneration	Slight	Osteoarthritis

Table 36. Health Registry (continued on next page)

18	Left Foot	First Toe (Metatarsal and Phalanges)	Ossification of Connective Tissue	Slight	Possible Injury
18	Left Foot	Second Medial Phalanx	Ossification of Connective Tissue	Slight	Osteoarthritis (Related to Injury of First Toe)
18	Left Foot	Fourth Metatarsal	Callus Formation	Slight	Possible Microfracture Injury
18	Right Foot	Fourth Metatarsal	Callus Formation	Slight	Possible Microfracture Injury
21	Right Foot	Talus	Ossification of Connective Tissue	Moderate	Osteoarthritis
21	Right Foot	Calcaneus	Ossification of Connective Tissue	Moderate	Osteoarthritis
22 (Adult Female 1)	Cranium	Maxilla and Mandible	Resorption	Slight	Periodontal Disease
22 (Adult Female 1)	Cranium	Right Temporomandibular Joint	Degeneration	Slight	Osteoarthritis
22 (Adult Male 1)	Right Foot	Talus	Degeneration	Slight	Osteoarthritis
22 (Adult Male 1)	Right Foot	Calcaneus	Degeneration	Slight	Osteoarthritis
22 (Adult Male 1)	Right Foot	Pollux	Ossification of Connective Tissue	Slight	Osteoarthritis
23	Cranium	Maxilla	Resorption	Moderate	Periodontal Disease
24	Cranium	Maxilla and Mandible	Resorption	Moderate	Periodontal Disease

Table 36. Health Registry *(continued on next page)*

31	Cranium	Mandible	Resorption	Slight	Periodontal Disease
32	Cranium	Mandible	Resorption	Moderate	Periodontal Disease

Table 36. Health Registry

Degenerative Joint Disease

By far, the most common health response observed was Degenerative Joint Disease (DJD). Commonly referred to as osteoarthritis, DJD is characterized by the gradual deterioration of synovial joints, frequently in association with advancing age; however, since this syndrome is also a function of physiological wear, phenotype, and use, it is usually diagnosed as a separate health risk (Jurmain 1977:354). DJD is largely a soft tissue malady. As a synovial joint is exposed to wear and tear, cartilage and associated membranes lose their ability to produce new cells and chemically balanced synovial fluid. These limitations place greater demands on the remaining tissue, stressing their ability to support and maintain the joint. The stimulation of osseous activity is an indication of advanced cartilage deterioration. Skeletal responses include replacement of overstressed cartilaginous articular surfaces with bone (surface osteophytes), development of synovial fluid filled cysts in and below the joint surface, sclerotic thickening of the underlying trabecular structure (pitting), and endochondral replacement cartilage along the margin with osteophytes (lipping). In addition to these responses, if cartilage loss exceeds replacement, contrasting bone surfaces may become eburnished, triggering intensive sclerotic bone formation within the articular surface. Among weight bearing joints, progressive remodeling of the articular surfaces tends to decrease the available joint surface area as a means of further accommodating for these changes (Johnson 1959:1225-1229). DJD commonly results in joint swelling, pain, and reduced joint movement.

DJD is classified as either primary in which no cause can be discerned and secondary where the joint has been affected by a disease or event such as an injury. With the exception of injuries, DJD is most commonly associated with weight bearing joints and those receiving a considerable amount of use. These include the knees, hips, temporomandibular joints, shoulders, fingers, and toes (Ortner and Putschar 1981:419; Steinbock 1976:279). Joint capsules rarely respond to DJD with a unified tissue response. Instead, joint tissues attempt to isolate and adapt local tissues to fulfill mechanical demands at points of compromise. Multiple independent skeletal responses often occur within a single joint. Some of the syndromes classified as activity stresses may also be components of DJD.

While all human populations are susceptible to DJD, the distribution of the condition across the skeleton varies by social context. Jurmain (1977:363) has attributed varying activity levels to differences in osteoarthritis. Differing social roles within a culture may also be responsible for varying degrees of DJD (Ortner 1968:139). For example, activities entailing extensive flexion of the arm joints, such as cotton picking, coal mining, foundry work, or bus driving are capable of producing extensive osteoarthritis (Kellgren and Lawrence 1958:395; Lawrence 1961:270, 1969:388; Lockshin et al. 1969:25; Mintz and Fraga 1973:78; Naira 1932:214-215). Jurmain (1980:149) suggested that within individuals, differences in osteoarthritis of the elbow may be due to handedness.

Seven adults from the Open Chapel Cemetery showed evidence of DJD. The primary individuals from Burials 9 and 18 (both males) exhibited osteoarthritic responses to injuries. These injuries resulted in chronic stresses that lead to joint modification in nearby joints. The unsexed adult from Burial 21 exhibited moderate lipping on the right talus and calcaneus. Primary Female No. 1 from Burial 22 exhibited degeneration of the right temporomandibular joint, which may have been related to tooth loss. Unfortunately, only the maxillary dentition was available for analysis, so this possibility cannot be confirmed. The primary individual from Burial 7 exhibited degenerative changes in the cervical and thoracic vertebrae. The cause is unknown, but may simply be related to old age. The adult female in Burial 17 showed joint degeneration likely related to activity stress and overuse of her arms and lower back.

Injuries

Merbs (1983:160) identified injuries as the result of any traumatic encounter with an environmental hazard. Injuries are characterized as health responses to an agent whose impact on the skeleton is acute, if not instantaneous, and whose objective is not to secure energy or nutrition from bone and soft tissues. Skeletal responses often entail losses and increases of connective tissue.

Bones shatter when strained beyond their tensile strength. They may be broken before or after archaeological deposition. Conical or spiraling fractures are diagnostic indications of perimortem injury (Villa and Mathieu 1991). These differ significantly from the flat, linear fractures common in archaeologically broken bone. These latter forms are not evidence of an injury.

Perimortem fractures imply that injury may have contributed to a host's death. Broken bones frequently exhibit biological responses, including woven, lamellar, and compensatory remodeled cortical deposits. Well-healed fractures are identifiable by abrupt changes in bone angle and resorption of the fractured margins.

The primary adult male from Burial 9 exhibited two major injuries including a broken right clavicle that failed to mend and compression fractures of the lower thoracic and upper lumbar vertebrae. The fracture of the lateral end of the right clavicle exhibited pseudoarthrosis, which as stated earlier is a false joint that can occur when the fracture results in a non-union of the bone. Pseudoarthrosis is most common in young adults (Aufderheide and Rodríguez-Martín 1998). Clavicle fractures are common and are most often caused by a fall onto the shoulder or onto an outstretched hand (Lovell 1997). Repeated use of the fractured shoulder resulted in the healing, but non-union of the bone. Compression fractures are often caused by vertical compressive force. Compression typically results in a wedge-shaped vertebral body as the posterior portion of the body has additional support from the neural arch and is less susceptible to crushing (Aufderheide and Rodríguez-Martín 1998). Compression fractures often result in forward bending (kyphosis) of the upper body.

The primary individuals from Burial 15 and 18 exhibited significant injuries to their feet. Burial 15 exhibited a distinct comminuted crushing injury and possible subluxation (partial dislocation) of the phalanges of the right fifth toe. Pitting, lipping, and ligament ossification were noted. It is possible that the individual sustained the injury during a forceful kick. The injury resulted in the permanent fusion of the distal and medial phalanges and the possible pseudoarthrosis of the distal end of the proximal phalanx. The first metatarsal and associated phalanges of the left foot of Burial 18 exhibited slight lipping indicating that the individual may have suffered an injury the hallux (big toe). A second medial phalanx also exhibited osteoarthritic lipping on the distal epiphysis. Bony callus formations were observed on the lateral aspect of the diaphysis of the left and right fourth metatarsals. These callus formations may be a response to microfractures associated with injuries sustained while running or similar activity.

Limb Bowing

Limb bowing can result from chronic mechanical load placed on a bone that is greater than the bone's architecture was capable of withstanding, yet controlled enough to prevent failure, or from developmental constraints placed on the bone's growth. The former was observed on the left humerus of the primary female in Burial 17. The humerus appeared slightly bowed and twisted. Though the etiology is unknown, it is possible that prolonged overuse of the arms caused morphological changes to the bone structure. The latter form of bowing forces the diaphysis to bow in order to meet growth demands within the element.

The primary child from Burial 4 exhibited a bowed right femur, which may have resulted from early infections or metabolic disorders such as rickets. Bowing of this type can be physiological or pathological. Physiological bowing begins in utero due to the constriction of the uterus and will correct itself over time, usually by three years of age. Pathological bowing tends to worsen over time and is caused by a variety of genetic conditions, malnutrition, or diseases (Pediatric Orthopaedics 2013). The two most common diseases known to cause bowing are Rickets and Blount's disease (American Academy of Orthopaedic Surgeons 2013; Pediatric Orthopaedics 2013). Rickets is a disease caused by a deficiency of Vitamin D that is necessary for the absorption of calcium and phosphorus (Aufderheide and Rodriguez-Martin1998; Roberts and Manchester 2005). The deficiency leads to a softening of the bones due to mineralization failure in growing cartilage and bone (Stuart-Macadam 1989). The weight-bearing bones, like the femora, become bowed when the child begins to walk (Roberts and Manchester 2005). The ends of the long bones expand to resemble the widened end of a trumpet. This deformity reflects the excessive unmineralized cartilage causing an increase in the overall size of the growth plates (Roberts and Manchester 2005; Steinbock 1976). The distal femur of this child reflects a trumpet-like shape. Additionally, excessive demineralization causes a thinning of the cortex and the trabecular bone becomes sparse and thin (Steinbock 1976). This child's femoral cortex was much thinner than normal and the trabecular bone was very fragile. Additionally, gastrointestinal, kidney and liver conditions, such as chronic diarrhea, metabolic insufficiency, and renal failure may result in the malabsorption of the vitamin (Mann and Hunt 2005; Roberts and Manchester 2005; Steinbock 1976). It is possible that this child's mother was chronically malnourished and that the child often suffered from diarrhea and/or malnourishment.

Single Instance Pathologies

Auditory Exostosis

An auditory exostosis was observed on the right temporal of the primary adult male from Burial 18. Auditory exostoses are benign lesions composed of skin-covered, circumscribed masses of dense bone located at the meatus or within the external auditory canal. In the case of Burial 18, the mass was located at the entrance to the auditory canal. Aufderheide and Rodríguez-Martin (1998) note that approximately 70 percent of lesions are found on the posterior wall beginning near the tympanomastoid suture, and Burial 18 conforms to this statistic. There also appears to be a strong bias for males to develop these lesions over females (Aufderheide and Rodríguez-Martín 1998; Gregg and Gregg 1987; Roche 1964). Gregg and Gregg (1987) also observed that few lesions were observed on individuals younger than 20, strongly suggesting that this is an acquired condition rather than a genetic abnormality.

While a number of causal agents have been offered, the most commonly accepted trigger of auditory exostosis development appears to be repeated exposure to cold water. These bony masses are often found in surfers and pearl divers. However, in recent years researchers have suggested that the exostosis can also develop in places where atmospheric temperature and wind action creates a similar environment (Okumura et al. 2007). Okumura et al. (2007) analyzed 676 skeletons from 27 coastal and inland native Brazilian groups, and found very low frequencies of auditory exostoses on the inland groups. They note the differences might be explained by the combination of water and atmospheric temperatures in combination with wind. They observed high frequencies of auditory exostoses in areas where cold atmospheric temperature were furthered lowered by strong wind chill. Tula is located in a mountainous region where temperatures can dip below freezing and strong winds are frequent. It is possible that these environmental conditions caused the growth of the exostosis.

Eagle's Syndrome

The primary adult male from Burial 18 also exhibited an elongated styloid process on the right temporal. Known as Eagle's syndrome, named for the man that first described it, is the elongation of the processes due to ossification of the stylohyoid ligament (Mann and Hunt 2005:51). The exact etiology remains unknown (Ghosh and Dubey 1999:171-172). Rechtweg and Wax (1998:316-317) suggested that it might form in utero due to increased calcification of the stylohyoid ligament. While most individuals are asymptomatic, others experience pain, impingement of the carotid artery, sore throat, feeling of something lodged in the throat, vertigo, cervical and facial pain, ear ringing, earaches, and headaches among other symptoms (Ghosh and Dubey 1999:170; Mann and Hunt 2005:51). It is thought that approximately four percent of the population has an elongated styloid process, but only a small percentage of those are thought to have related symptoms (Rechtweg and Wax 1998:317).

Arachnoid Granulations

Originally described by Pacchioni in 1705 as Pacchionian depressions, Arachnoid granulations are "herniations of the arachnoid membrane into the dural venous sinuses on the surface of the brain" (Grzybowski et al. 2007:6). They are thought be the result of the body's ability to reduce intracranial pressure by releasing cerebrospinal fluid into venous circulation (Mamourian and Towfighi 1995; Mann et al. 2004). They appear to be the major structures modulating sustained, nonlethal elevations of intracranial pressure (Mann et al. 2004). Mamourian and Towfighi (1995) note that these structures are common in humans. They are not present at birth but can be observed in children as young as 18 months of age. Studies have shown that there is no correlation between the presence of arachnoid granulations and age or sex (Koshikawa et al. 2000). They often enlarge with age and create smooth, evenly marginated impressions on the inner table of the skull. They sometimes expand into the diploetic space and sometimes, though rarely, can erode the outer table. Arachnoid granulations are currently not known to cause pain or other symptoms, though they are often discovered incidentally during routine tests used to determine the cause of intense headaches (Kan et al. 2006). The primary adult female from Burial 8 exhibited several arachnoid granulations on the endocranial surface. It is unlikely that the arachnoid granulations would have contributed to the woman's death.

DENTAL HEALTH

Teeth are primarily composed of enamel and dentine; two of the hardest substances made by the human body. These durable compounds enable teeth to survive in some of the harshest archaeological environments, and are often the only remaining elements of the skeleton or at least the best preserved. Teeth can therefore be relied on to provide important information about the state of an individual's oral health and general wellbeing. They can provide evidence of diet and dental diseases that lead to insights about biological, socioeconomic, and behavioral aspects of a community's way of life. Nutritional stress may also be recorded in the teeth. They provide evidence of social habits and can illuminate biological responses to environmental factors.

Dentition from the Open Chapel burial collection exhibited evidence of environmental stress in the form of periodontal disease, dental caries, calculus, hypercementosis, attrition, and enamel hypoplasias. The following chapter provides a discussion of general health responses observed on a total of 711 teeth.

Periodontal Disease

The tissues that support teeth include the bones of the maxilla and mandible, the periodontal ligament, cementum, gingivae (gums), and mucosa. The portions of maxilla and mandible that hold the dentition are referred to as the alveolar process, which incorporates the tooth sockets (alveolae) and the periodontal ligament that surrounds and holds each tooth in place (Hillson 1996). Microorganisms constantly threaten these tissues, either directly or indirectly. Numerous bacteria, including Gram-negative and Gram-positive streptococci and filaments, are present in the mouth within hours of birth (Hillson 1996). It is these bacteria, along with injuries, that trigger inflammatory responses. The site of the inflammation is referred to as the "lesion." The development of a lesion is broken down into four phases. The first three are classified as initial, early, and established gingivitis; they involve only the gingivae. The last stage, periodontitis, is a deeper lesion that involves all the periodontal tissues (Hillson 1996).

Periodontal disease, the chronic form of periodontitis, is triggered by bacteria and bacterial deposits. These deposits, collectively referred to as plaque, form along the gum line. Over a period of successive weeks, the gingival lesion grows as the body attempts to defend itself against the bacteria. The periodontal ligaments loosen as the lesion continues to expand causing pockets to develop beside the afflicted teeth. Sub-gingival plaque accumulates in these pockets. At this stage, the lesions may stabilize for many months and occasionally they can heal. Unfortunately, they can also escalate into more severe infections leading to further resorption of alveolar tissue. At the chronic stage, the process is punctuated with periods of growth and rest over the course of many years; this cycle is common among adults over 30 years of age (Hillson 1996).

Periodontal disease is not limited to adults. Other forms include prepubertal periodontitis, which occurs with eruption of the deciduous teeth, and juvenile periodontitis, a condition that arises with the eruption of permanent first molars and incisors (Hempton et al. 2011; Hillson 1996). Another form, rapidly progressive periodontitis, arises in late childhood or early adulthood and is responsible for destroying the bone surrounding afflicted teeth. These conditions however, are relatively uncommon (Hillson 1996).

In archaeological and dry bone settings, periodontal disease is recognizable by slight to significant alveolar resorption. During active phases of periodontal disease, the living alveolar bone resorbs both vertically and horizontally leaving the dental roots exposed. Resorption usually exposes only the cemento-enamel junction (CEJ) in minor cases and the majority of the root in more significant infections. Compounding the issue, teeth continue to erupt throughout an individual's lifetime in a biological attempt to counter act the effects of dental wear (Hillson 1996). This is where the term "long in the tooth" originated. Continued eruption translates into more root exposure and a greater opportunity for periodontal infections. Because periodontal disease is a chronic condition, it is more prevalent in older members of a given population. Periodontal disease can affect one tooth or a series of adjacent teeth. It often tends to be symmetrical, forming on corresponding areas in the maxillary or mandibular arcades. Periodontal disease particularly affects the incisors, first and second molars, and then adjacent teeth as the disease progresses. The disease can also form at trauma sites when the tooth or surrounding bone is significantly injured.

At least 11 individuals from the Open Chapel cemetery exhibited signs of periodontal disease. Preservation of the maxilla and mandible from most remains was poor and precluded examination of the alveolar margin. This discussion provides a minimum estimation of the presence of periodontal disease.

The primary subadult from Burial 8, aged 15-16 years, exhibited slight alveolar resorption on the maxilla and mandible. The child likely developed rapidly progressive periodontitis. This form of periodontitis is seen most commonly in young adults but can occur in any post-pubertal individual. Destruction of the alveolar bone and gingival tissues is very rapid, with damage occurring within a few weeks or months (Page et al. 1983). Individuals with this condition can suffer from a variety of symptoms, including general malaise, weight loss, and depression (Page et al. 1983). The disease can progress to complete tooth loss or remain dormant for indefinite periods of time. Because all forms of periodontal disease are caused by bacterial infections gaining a foothold over the host's immune system, physiological assaults on bacteria colonies may not be effective. This is especially true if one's constitution is compromised by disease and malnutrition.

Ten adults exhibited slight to moderate periodontal disease. Males (N=5) were slightly more affected by periodontal disease than females (N=3), though this may be a result of overall poor preservation for the majority of burials. Primary individuals from Burials 3, 6, the Adult Female from Burial 22, 24, and 31 exhibited slight resorption. The primary individuals from Burial 7, 15, 18, 23, 24, and 32 exhibited moderate resorption. While adult periodontal disease is primarily caused by plaque (see below), several risk factors can aid in the progression of the disease. These include misalignment of teeth, smoking, diabetes, pregnancy, nutritional deficiencies, blood diseases, and genetic factors, among others (Intelligent Dental 2011; Wilson 1999).

Calculus

The oral cavity is one of the primary sources of entry into the human body. The mouth is moist, warm, and frequently bathed with nutrients. It is continually colonized by a variety of bacteria, fungi, yeasts, viruses, protozoa, and other microbes. These microbial communities grow in fissures, tissue margins, and gingival crevices that are protected from the rinsing and cleaning aspects of saliva, lips, tongue, and cheeks (Hillson 1996). Dental plaque is deposited in and around colonies established by these invading agents. Though plaque bacteria obtain the majority of this sustenance from saliva, substances dissolved in it, and from gingival crevice fluid; a small portion comes directly from masticated food such as fermentable carbohydrates (starches and sugars), and casein, a dairy protein (Hillson 1996). Left unchecked, dental plaque accumulates faster when the host consumes high protein and carbohydrate diets (Roberts and Manchester 2005).

Dental calculus is mineralized plaque attached to the surface of a tooth (Hillson 1996). Calculus is relatively resistant to soft tissue decomposition and it is readily recognizable in dry bone settings. In addition to diet, calculus deposits indicate ineffective or non-existent measures to remove plaque (Roberts and Manchester 2005). These measures would have included tooth brushing, dental rubbing, flossing, and consumption of abrasive foods. Calculus deposits are often found at sites that are close to salivary glands, specifically the lingual surfaces of anterior teeth and buccal surfaces of the molars. Two types of calculus, supra-gingival and sub-gingival, are recognized (Hillson 1996). Supra-gingival calculus, the more common of the two, attaches to the enamel of the cervical tooth crown, and on dry bone specimens it usually appears as a band marking the position of the gum line. Established deposits can develop into elaborate, overhanging growths, and left unchecked are capable of spreading from one to several teeth throughout the mouth. Sub-gingival calculus grows on the root surfaces as the gums recede. It is thinner and harder than supra-gingival calculus making it more likely to survive in archaeological environments. Unfortunately it is also more difficult to differentiate from normal root cement in a dry tissue state (Hillson 1996).

The size and speed of development for both types of calculus varies by individual, largely from differences in disease load, constitution, genetic predisposition and type of pathogen. Though plaque formation is required for calculus development, large plaque deposits do not necessarily lead to large calculus deposits (Hillson 1996). Plaque can be extensive, yet leave little to no calculus deposition. However, initiation of mineralization, a key part of calculus formation, is linked to the presence and distribution of plaque. Factors including poor dental hygiene or carbohydrate consumption are critical agents governing how thick and extensive the deposits will develop (Hillson 1996). Sub-gingival calculus typically follows the advance of periodontal disease and spreads down exposed root surfaces deepening the periodontal pocket (Powell and Garnick 1978).

Hypercementosis

Hypercementosis is the massive overproduction of cementum, a substance designed to help affix a tooth's root to the surrounding alveolar tissues. Unlike other dental hard tissues, it can be deposited at any point in a subject's lifetime. Hypercementosis probably helps to attempt to stabilize and support weakened mechanical structures in the oral environment. Hypercementosis typically results in a swollen irregularly bulbous dental root (Hillson 1996). The affects of hypercementosis can be localized to a single tooth or involve several teeth. When more than one root of a multi-rooted tooth is affected, the swollen roots can unite into on large singular mass. These features make hypercementosis easily recognizable in dry bone specimens.

Researchers do not fully agree on what agents are behind hypercementosis. It is probably a biomechanical response to multiple agents with excessive wear or malocclusion being the most likely causes (Hillson 1996). Other researchers have identified multi-factorial combinations of advanced periodontal disease, vitamin deficiency, and malnutrition as likely sources (Corruccini et al. 1987). In a study of Barbados slave remains, Corruccini et al. (1987) concluded that a diet dominated by corn, which contributed to the host's vitamin and mineral deficiencies, and punctuated with seasonal periods of nutritional improvement (availability of specially procured, butchered, or grown foodstuffs) likely contributed to a high incidence of hypercementosis.

At least four individuals (Burials 17, 22, 31, and 32; one female, one unsexed adult, and two males, respectively) exhibited hypercementosis. The maxillary right first and second molars from Burial 17, the maxillary right central incisor from Burial 22, the maxillary left first molar from Burial 31, and the mandibular left second premolar from Burial 32 possessed swollen, bulbous roots. With the exception of the unknown individual from Burial 22, each of these individuals exhibited tooth loss of adjacent teeth or the corresponding teeth on the opposite arcade. It is very likely that these five teeth developed extensive cement due to advancing periodontal disease and subsequent surrounding tooth loss.

Dental Caries and Diet

Caries, commonly referred to as cavities, are the most frequently cited cause of oral pain (Waldron 2009). They are infections that result in the progressive destruction of tooth structures. Caries form by the demineralization of enamel dentin, and other dental hard tissues by organic acids. These acids are produced by the bacterial fermentation of carbohydrates, especially sugars (Larsen 1997). Demineralization is initiated by microbial activity on the tooth's surface (Pindborg 1970). Macroscopically, lesions are divided into two types: progressive (acute) and arrested (chronic) (Pindborg 1970). Acute lesions are often associated with younger individuals and tend to have a white chalky appearance (Ortner and Putschar 1981). Chronic lesions can occur at any age and appear as yellow to dark brown cavities or pits in the tooth's surface. Chronic caries can progress slowly between alternating periods of active decay and remineralization (Featherstone 2004). These caries can remain dormant for months or even years (Hillson 1996). Alternatively, they can aggressively destroy a tooth in a relatively short period of time. Left untreated, however, both acute and chronic caries may result in the destruction of the entire crown and significant portions of the roots. Once the pulp chamber is exposed, the risk of infection runs high; localized abscesses form and the supporting alveolar bone is gradually destroyed (Ortner and Putschar 1981).

Caries development follows several predictable patterns. Molars are the most commonly affected teeth; these are followed in caries frequency by premolars, canines, and finally the incisors (Hillson 1996). Lesions can be found either on the crown or root surfaces; these are typically classified as pit and fissure, occlusal, mesiodistal (interproximal), and root surface caries. Caries that develop in the fissure systems that run across the occlusal surfaces of molars and premolars are most common in populations with westernized diets. Sometimes referred to as coronal caries, they are typically found in children. The incidence of coronal caries rises steadily to around age 15 and then decreases during early adulthood (Hillson 1996). Girls are more commonly affected than boys. Interproximal caries, which form in the spaces between adjoining teeth, and root surface caries are more prevalent among adults. The distribution of caries may be similar between family members over several generations suggesting that there may be genetic propensities for caries development (Hillson 1996). However, common factors including environmental factors, cleaning routines, cultural habits, and diet also play critical roles in caries formation.

Several bacteria have been shown to be capable of inducing carious lesions. Streptococcus mutans is recognized as the most cariogenic, followed by members of the Streptococcus oralis, Streptococcus milleri, and Streptococcus salivarious groups, as well as Actinomyces naeslundii, Actinomyces viscosus, and lactobacilli (Hillson 1996). Streptococcus mutans and lactobacilli are the most common agents and are able to rapidly convert sugars into acids. These microbes thrive in acidic conditions that are toxic to many other microorganisms (Hillson 1996).

By themselves, these microbes are unable to produce the devastating effects associated with caries. Sugar consumption considerably enhances their ability to demineralize teeth.

In descending order of importance, sucrose, glucose, and fructose are the most commonly consumed sugars responsible for carious growth (Sheiham 1983). Brown sugars appear to be as cariogenic as the more refined white forms. High sugar consumption is cited as the principal cause of caries, making dental caries the most common disease found in industrialized countries (Sheiham 1983). Sugar alone is not responsible for carious lesions. Proteins and other carbohydrates may also affect caries growth, but their roles are as yet unexplored (Hillson 1996).

Examinations of dental caries across many cultures have emphasized the role that diet, principally sugar consumption, plays in the development of carious lesions. Caries frequency appears to have been low among hunter-gatherers (Hillson 1996; Ortner and Putschar 1981). This was likely the result of a varied diet that balanced proteins and carbohydrates with the consumption of less refined and more abrasive foods. However, as communities began to cultivate maize and other crops the incidence of caries more than doubled (Hillson 1996; Larsen 1997; Ortner and Putschar 1981).

According to Super and Vargas (2000), though Central Americans viewed maize as the most important food source, the rich diversity of other plants and animals provided a relatively well balanced diet. Prior to contact with Spanish explorers, the native Mexicans cultivated and collected maize, squash, beans, tomatoes, chillies, amaranth, catus, avocado and quava. Domesticated rabbits, dogs, turkeys, and wild birds, fish, reptiles, amphibians, and insects provided ample animal protein. With the arrival of the Spaniards, came dietary and cultural changes that are still visible in the Mexican culture. Perhaps the most obvious change in diet came with the introduction of wheat rice (Super and Vargas 2000). The Spaniards also introduced pigs and sheep as a new source of animal protein. By the sixteenth century other Spanish dietary staples such as onions, garilic, carrots, turnips, eggplants, lentils, peaches, melons, figs, cherries, oranges, lemons, limes and grapefruit had become regular items in the Mexican diet (Super and Vargas 2000).

FREQUENCY RATES

Of the total 711 deciduous and permanent teeth observable within the assemblage, only 53 (7.5%) exhibited at least one carious lesion. A total of 385 teeth came from adults, nine percent of which exhibited a lesion. Similarly, 326 teeth (both deciduous and permanent) came from subadults, with 5.5 percent exhibiting a lesion. This suggests that while most individuals did not develop caries, the occurrence of lesions between children and adults was very similar.

When comparing males and females, caries occurrence was again similar. Out of 11 primary adult males with observable dentition, eight (73%) exhibited carious lesions. Of the five females with dentition, three (60%) exhibited lesions. This pattern suggested that most individuals were exposed to the same, or at least similar, external factors such as diet.

Given the varied diet of the central Mexicans, both before and after conquest, it is unsurprising that the caries incidence among the inhabitants of Tula was quite low. While still relying heavily on maize for at least a portion of most meals, the abundance of other less cariogenic foods may have helped reduce the devastating effects of a high carbohydrate (sugar) diet.

Dental Loss

Loss of teeth from the dental arcade is a complex and multi-causal process (Lukacs 2006). It can be the end result of a history of poor oral hygiene, long-term exposure to cariogenic factors, trauma, extraction, metabolic and nutritional diseases, hormonal fluctuations, extreme attrition, or the effects of extensive calculus buildup leading ultimately to periodontal disease (Cucina and Tiesler 2003; Hillson 1996; Larsen 1997; Lukacs 2006; Waldron 2009). The most commonly recognized causes however are the development of caries and the presence of periodontal disease (Owsley et al. 1987; Okumura 2010). Researchers do not agree which agents are the primary ones responsible for ante-mortem tooth loss (Cucina and Tiesler 2003; Larsen 1997).

Recognizing when tooth loss occurred in a skeletal population is not difficult if the surrounding bone is well preserved. If a tooth was lost just prior to or immediately after death (i.e. perimortem loss), the surrounding alveolar bone appears pristine with no evidence of remodeling. However, if the tooth was lost months to years before death, the alveolar margin exhibits partial to extensive remodeling; it can even appear smooth. Extensive tooth loss often results in the complete remodeling of the mandible and maxilla. In many cases root sockets may be completely resorbed. The bones of edentulous individuals, those who have lost all of their teeth, tended to lose considerable volume. Maxillary alveolar processes may be flattened to the level of the palate and the mandibular body may loose over half of its height. To meet the biomechanical demands of mastication, the mandibular body frequently curves superiorly, creating a condition commonly referred to as 'rocker jaw.'

Throughout the world and across time, tooth loss has been recognized to increase with age; tooth loss has more often been associated with women than men (Jurmain 1991; Lukacs 2006; Rathbun 1987; Waldron 2009). Extensive tooth loss interferes with mastication and the inability to adequately mechanically reduce foods frequently results in malnutrition (Waldron 2009). Analysts often divide the teeth into geographic classes, the posterior teeth (molars and premolars) and the anterior teeth (incisors and canines), to understand the processes associated with dental loss. In general, molars and premolars are much more likely to be affected by abscesses and carious lesions as they are harder to clean (Hillson 2001). As a result, they tend to be more vulnerable to dental loss.

Oral cavities were examined in the Open Chapel assemblage for evidence of ante-mortem tooth loss. Emphasis was placed on the condition of the alveolar bone as not to confuse ante-mortem with peri/postmortem tooth loss. Unfortunately, preservation of the skeletal material was generally quite poor, therefore the following discussion provides information on a small subset of the population. Pre-mortem resorption was detected in nine individual tooth losses among only four individuals (Burials 9, 18, 23, and 41). All nine teeth were posterior premolars and molars. Molars made up 66 percent of the affected teeth, and of those half were third molars.

Further examination revealed that eight of the nine resorbed teeth came from males. All observable individuals were dentate at the time of death, meaning that they had at least one tooth present in occlusion. None were edentulous. The primary adult male from Burial 9 exhibited the most significant observable tooth loss in the population with the loss of at least six teeth. While the sample size was admittedly small, a weak pattern emerged showing that males appeared to have more catastrophic tooth loss per person while females tended to have less tooth loss. Lacking living case histories for archaeological populations compromises any attempt to specify etiological factors to any given case of tooth loss (Lukacs 2006). It is not possible to determine the exact cause of tooth loss for each individual at the Open Chapel, but in the case of Burial 9 it is likely associated with significant dental attrition and age as the individual survived into his mid 30s or early 40s.

Attrition

The loss of dental structure is not caused by caries alone. Imfeld (1996) noted that non-carious loss of dental hard tissue is rarely caused by one process; rather, it is almost always multifactorial. Some of these agents are typically grouped together as dental wear. Attrition, or dental wear, can be viewed as the result of abrasion, demastication, attrition, abfracation, resorption, and erosion. Abrasion is the mechanical wearing away of the enamel through repeated grinding, rubbing, or scraping of the teeth against non-food or foreign objects, such as sand and grit from grinding stones or through using teeth as tools. It can be localized or diffuse. Demastication is the process of wearing away the enamel through chewing. Wear is influenced by the amount of abrasive foods consumed or the accidental introduction of abrasive substances such as sand or nutshells with food. Attrition refers to the physiological wearing away of dental hard tissues as the result of tooth-to-tooth contact (i.e. grinding of teeth). This can occur during swallowing, speech, sleep, or when lifting heavy objects. Abrification is a special form of wedge-shaped defect at the CEJ; it is thought to be the result of eccentrically applied occlusal forces that lead to tooth flexure and ultimately fracture, usually as the result of malocclusion. Resorption describes the process of biological degradation and assimilation of the enamel or root structures back into the body. Finally, erosion is the gradual destruction of the surface of the enamel, usually by chemical processes, such as the introduction of acidic foods. Erosion causes the enamel surface to soften rendering the tooth more susceptible to the effects of abrasion, demastication, and attrition (Imfeld 1996).

All teeth available for observation in the Open Chapel population were macroscopically examined for the presence of wear. The extent and severity were recorded for each tooth following standards set forth in Smith (1984:45-46) (Tables 37 and 38). For the purposes of this analysis, only permanent teeth that were fully developed and erupted and that lacked gross caries or extensive calculus were included. Observations focused on mandibular and maxillary central incisors and on the first molars. These two tooth types allowed for a simplified and contrasting analysis of anterior with posterior teeth. Since first molars and incisors tend to erupt at the same general developmental period (around 6-7 years of age), these teeth have been exposed to the same agents approximately the same lengths of time. A comparison of right versus left incisors and molars indicated that no difference in appreciable wear was present. As a result, the right central incisor and first molar were examined. If a right tooth was missing, the left was substituted. A total of 34 incisors and 36 molars were examined from approximately 24 individuals, including loose teeth recovered from unprovienced context.

Score	Definition
0	Missing or Cannot be Coded
1	Unworn to Polished or Small facets (no dentin exposure)
2	Point or Hairline Dentin Exposure
3	Dentin Line of Distinct Thickness
4	Moderate Dentin Exposure No Longer Resembling a Line
5	Large Dentin Area with Enamel Rim Complete
6	Large Dentin Area with Enamel Rim Lost on One Side or Very Thin Enamel Only
7	Enamel Rim Lost on Two Sides or Small Remnants of Enamel Remain
8	Complete Loss of Crown, No Enamel Remaining; Crown Surface Takes on Shape of Roots

Table 37. Dental Observation Battery Used to Evaluate Wear of Incisors (After Smith 1984)

Score	Definition
0	Missing or Cannot be Coded
1	Unworn to Polished or Small facets (no dentin exposure)
2	Moderate Cusp Removal (Blunting)
3	Full Cusp Removal and/or Some Dentin Exposure Pinpoint to Moderate
4	Several Large Dentin Exposure Areas, Still Discrete
5	Two Dentinal Areas Coalesced
6	Three Dentinal Areas Coaleaced or Four Coalesced with Enamel Island
7	Dentin Exposure on Entire Surface, Enamel Rim Largely Intact
8	Severe Loss of Crown Height, Breakdown of Enamel Rim; Crown Surface Takes on Shape of Roots

Table 38. Dental Observation Battery Used to Evaluate Wear of Molars (After Smith 1984)

Initially, the dental population was examined by tooth form for amounts of visible wear. In general, both incisors and molars exhibited similar amounts of wear, and most teeth exhibited moderate dental wear with some dentin exposure. The first molars, however, exhibited slightly more wear overall than the incisors. This was not unexpected, as molars seemed to be more susceptible to wear agents than incisors.

The dental sample was then examined by sex. Individuals whose sex was unknown were not included. A comparison of the wear on maxillary and mandibular central incisors and molars for females showed that the maxillary dentition exhibited more wear than the mandibular teeth. The same trend was present for the males. This pattern suggests that both males and females had access to the same general diet. No unusual wear patterns related to tool use or other non-masticatory cultural trends were observed on the dentition of the individuals buried at the Open Chapel.

Enamel Hypoplasias and Childhood Stress

Over the course of a lifetime, an individual's body is constantly exposed to stresses that inhibit normal growth patterns. Human genotypes produce the cells and tissues that are needed to overcome many stressors, but they are not capable of meeting every challenge. If periods of stress are long lasting, severe, and uncontrolled, they can have devastating effects on the individual and leave permanent stress markers in the skeleton. Markers including Harris lines, stature, bone length, and porotic hyperstosis leave records of metabolic insults during development. Hypoplasial bands in the dentition are an indelible record of stress-induced growth interruptions that are exclusive to the teeth. Hypoplasias result from an arrest in enamel development. They can form on the crown of both deciduous and permanent teeth, and are considered by many to be one of the most valid indicators of stress on the skeleton (Goodman et al. 1980; Slaus 2000). Once formed, they remain visible for as long as dental enamel is present.

The development of enamel hypoplasias cannot be attributed to a single specific disease or stress episode in an individual's life without a detailed medical history. They appear to be generalized responses to physiological stresses including malnutrition, infectious disease, psychological or physical trauma, which are among the metabolic disruptions recognized as responsible for dental enamel hypoplasias (Cutress and Suckling 1982; Goodman et al. 1980; Lanphear 1990; Slaus 2000). Studies of living children have noted that poor nutrition and low socioeconomic status correlate positively with high frequencies of hypoplasias (Goodman et al. 1991, 1992).

Enamel disruptions can take many forms, such as discolorations, lines, pits, or groups of pits (Pindborg 1970). The etiologies of these various forms are still the subject of considerable debate. In the Open Chapel population, hypoplasial bands and pits and bands of discoloration were observed on the dentition. In order to quantify when stress events capable of causing hypoplasial defects occurred across the population, analysis focused primarily on permanent teeth. Hypoplasial defects were noted in the deciduous teeth of two children; these will be discussed separately.

Hypoplasial defects were translated into half-year periods of disruption ranging from birth to seven years of age for permanent teeth. The period of disruption was calculated by converting a measurement from the CEJ to the inferior margin of the defect and referencing this measurement with the period of development estimates provided by Goodman et al. (1980), following the recommendations put forth by Massler et al. (1941) and Swärdstedt (1966). Occurrence of a single hypoplastic band at any given half-year period may reflect local disturbances specific to an individual tooth, such as an injury. These were eliminated from the current analysis. A half-year period was considered positive for systemic growth disruption if two or more teeth exhibited bands formed during the same developmental period or if a single tooth exhibited two bands within the same half-year increment. The timing of developmental disruption was examined across all of an individual's teeth to establish patterns of systemic growth and growth arrest through time. Out of a total of 87 hypoplastic bands on eight individuals, 72 were recorded as positive defects. Positive defects were encountered on the permanent dentition of seven individuals. The two hypoplastic bands observed on the primary individual from Burial 17 may reflect instances of injury or isolated illnesses.

Among the Open Chapel dental sample, periods of stress occurred in both annual and biannual increments (Table 39). This pattern suggested that two different types of stress were triggering growth arrest. Goodman et al. (1980) suggested that yearly periods of disruption may be due to seasonal stress, particularly periods of reduced nutrients or scarcity of food during the winter months. These yearly periods of disruption show up as one positive stress episode each year. This can be seen in Table 39. For example, the primary individual from Burial 8 exhibited single periods of positive stress at ages 1.5 and 2.5. Conversely, continuous periods of stress across half-year increments may reflect ongoing stress episodes a year. This can be seen in the dentition from the primary individual from Burial 19, when the individual experienced an ongoing stress event from 2-4 years of age. This data demonstrates that at least some individuals at the Open Chapel sample experienced periods of developmental stress that lasted long enough to leave permanent records on their teeth.

Year	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7
Individual															
4			X	X		X	X		X	X					
6						X									
8				X		X									
8.1							X	X							
19					X	X	X	X	X						
24						X	X	X							
32							X								
Total Number by Half-Year	0	0	1	2	1	5	5	3	2	1	0	0	0	0	0

Table 39. Positive Stress Episodes by Half-Year Increments

Across the population there was generally one peak period of stress observed from 2.5-3.5 years of age. This peak corresponded with a period that most researchers associate with weaning (Lanphear 1990). Weaning and post-weaning periods are universally recognized as times of increased stress for a child (Clark 1980; Underwood and Hofvander 1982; Moggi-Cecchi et al. 1994; Relethford 1994). Weaning entails a gradual loss of nutrients and a reduction in immunity, both of which were provided by the mother's milk. The switch to foods originating outside of the mother increases contact with pathogens from the external environment. Weaning is an extremely stressful transition and without adequate nutrition, a child's growth can be disrupted, resulting in dental hypoplasias. This data implies that weaning may have occurred between 2.5-3.5 years of age for the children at the Open Chapel, and that it represented a major insult to some children's development. However, given that the majority of the dentition recovered from the Open Chapel did not exhibit enamel hypoplasias, is it possible that a secondary cause is responsible for the developmental distress.

Hypoplasias were also examined relative to the individual's age at death. Four adults and three children exhibited hypoplastic bands. This age distribution suggests that the majority of individuals with positive stress episodes were adults and that the presence of stress episodes meant that they were more likely to survive into adulthood. However, when the percentage of total hypoplasial bands were calculated for adults (25%) and children (75%) the converse appears true. Excessive numbers of stress episodes suggests that children were less likely to survive into adulthood (Table 40). Slaus (2000) noted this same pattern in the Nova Raca cemetery in Croatia. He observed that subadults consistently exhibited higher frequencies of hypoplastic teeth than adults. Slaus (2000) also noted that fewer adults had hypoplasias than children and the afflicted adults had fewer defects per person than those who died as children. He suggested that the incidence of hypoplasias was a potential precursor to early death. While the number of individuals with hypoplasias in the Open Chapel assemblage was relatively small, a general trend for children to express more enamel defects was consistent with Slaus' findings. This suggests that they were subjected to more physiological stresses than they were able to withstand.

The results of this investigation suggest that the occurrence of hypoplasial defects in an individual may be related to chronic malnutrition, illness, or weaning. The added the demands of labor often forced some of the body's functions to run at a deficit. While scaling back on allocations to development may have long-term repercussions, it enabled the individual to survive their current stress event. Malnutrition lowered the individual's resistance to infections, which in turn interfered with nutrition by altering absorption in the digestive system and increased physiological needs for nutrients (Hutchinson and Larsen 1988; Moggi-Cecchi et al. 1994; Wood 1996).

Burial	Age at Death	Number of Affected Half-Year Increments
4	10 years +/- 1.5 years	6
6	Adult	1
8	13-16 years	2
8.1	Adult	2
17	30-34 years	0
19	9-12 years	5
24	20-30 years	3
32	35-40 years	1

Table 40. Ages of Individuals with Enamel Hypoplasias

When viewing these data, it is not possible to differentiate the etiology of hypoplasias in archaeological assemblages. Patterning of the hypoplastic bands imply that seasonal food shortages and weaning were likely triggering events among systemic representations and that injury and illness prompted more localized responses. These precipitating events likely had devastating effects on many of the children in the Open Chapel.

It must be emphasized that enamel hypoplasias were only recorded on individuals that survived biological stress events. Some children did not survive these nutritional stresses or illnesses. Wood (1996) warned that death eliminated individuals that could not overcome the stress event, thereby leaving only their bones as an interpretable record of the event. This is reflected in the high number of subadults found in the Open Chapel population. Two infants, aged 2 years +/- 8 months (Burial 19.2 and 26), exhibited hypoplastic bands on their deciduous dentition. As stated earlier, this type of enamel hypoplasia is often referred to as "Cuspal Enamel Hypoplasias" or CEH, which begin at the very onset of tooth development (Ogden et al. 2007:960). The presence of developmental stress at beginning of cusp development suggests the mother was malnourished or sick during pregnancy and unable to protect the growing fetus from significant metabolic stress during the late stages of pregnancy including malnutrition, illness, or pregnancy related stresses (Ogden et al. 2007:964).

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